ENGINEERING NEWS-RECORD

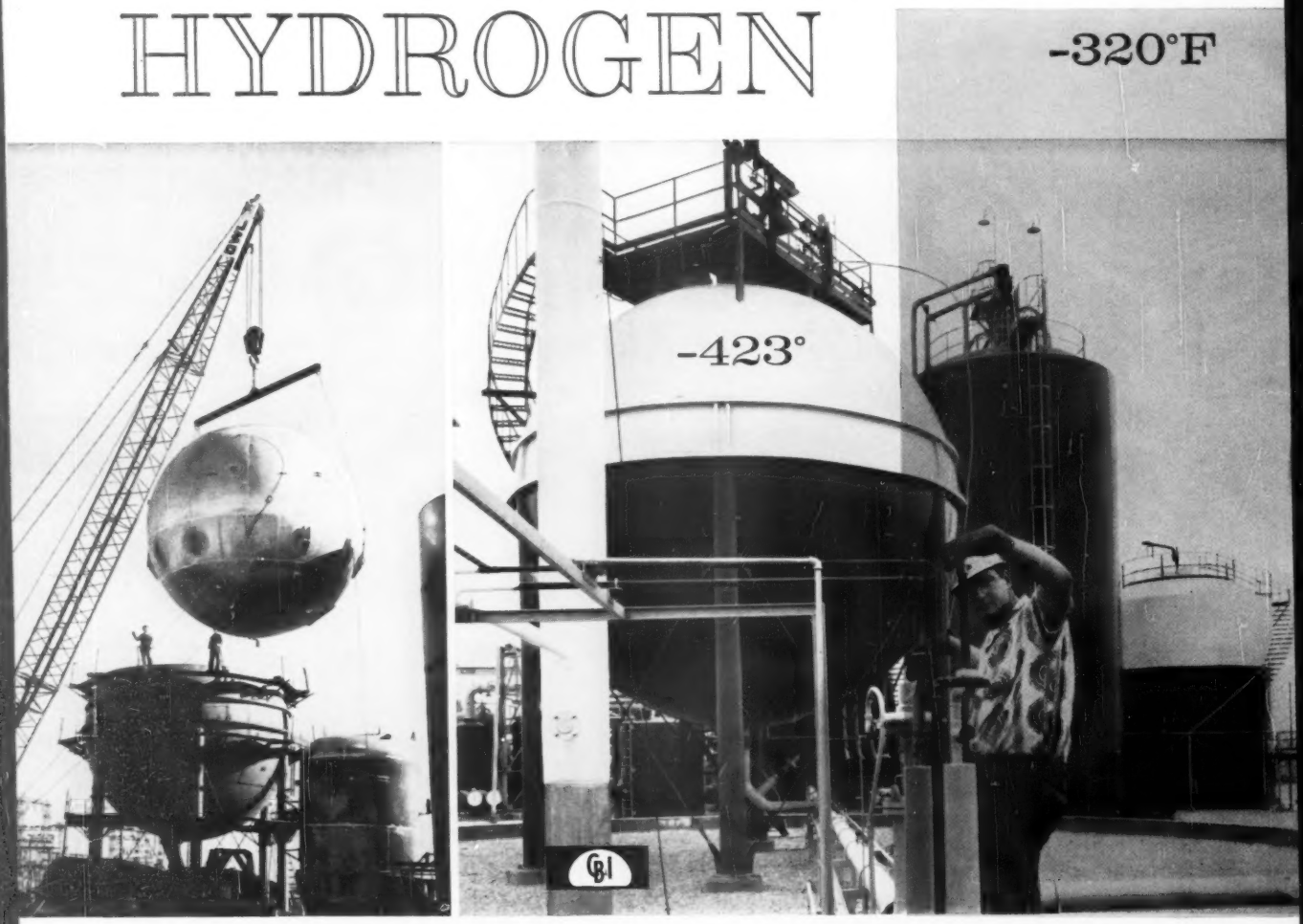
Thailand: Pace-setter in Southeast Asia p.30

A McGRAW-HILL PUBLI

STEVENS RICE GS N
UNIV MICROFILMS INC EDI
313 N FIRST ST
ANN ARBOR MICH C 4-

First privately owned and operated space-age plant
furnishes liquid hydrogen
to missile centers
and industrial users

NITROGEN
HYDROGEN



These double-wall cryogenic storage tanks play a vital role in the first privately-owned plant to supply liquid hydrogen on a large-scale commercial basis. Hydrogen is stored in the sphere at −423°F and nitrogen in the cylindrical tank at −320°F. Located in Torrance, Calif. and owned by Linde Company, Division of Union Carbide Corporation, the plant will deliver 3,300,000 lbs. of liquid hydrogen yearly to missile centers. Both tanks were designed (using Linde-approved designs), fabricated and erected by CB&I, world's most experienced builder of cryogenic vessels.

ABOVE: Aluminum inner shells and carbon steel outer shells were used for the two cryogenic tanks. The spherical tank is 28 ft. in diameter and the cylindrical tank 21½ ft. Special insulation is between the shells.

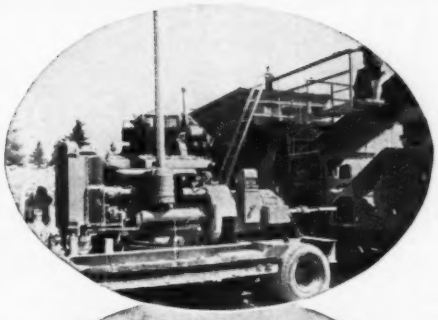
TOP LEFT: The inner sphere is suspended in the outer sphere by stainless steel rods positioned around the perimeter. Resting on the ground nearby is the aluminum inner shell of the cylindrical nitrogen tank.

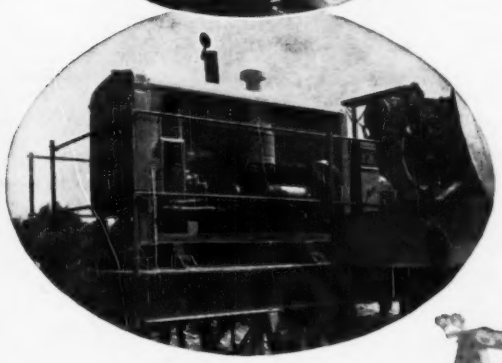
LEFT: A trailer is being loaded with liquid hydrogen for delivery to missile centers, other government installations, or industry.

CB&I

Chicago Bridge & Iron Company
332 South Michigan Ave., Chicago 4, Ill.
Offices and Subsidiaries Throughout the World

CB-612





Economize with

MURPHY DIESEL

Dependable Job-Site

ELECTRIC POWER

Murphy Diesel Mech-Elec Unit (upper left) supplies electric and mechanical power simultaneously or separately for a portable aggregate plant in the East.

Murphy Diesel Generator Set (left) provides inexpensive dependable electric power for a portable asphalt plant in New Hampshire.

Murphy Diesel Generator Set (below) reduces power-plant maintenance costs on an all-electric scalping plant in South Dakota. A 121 KW Murphy powers the plant.

Whatever *your* job, Murphy Diesels' economical operation and dependability for heavy-duty service keep costs low and profits high. Ask your Murphy Diesel Dealer about the advantages of Murphy Power for your plant.

404N

MURPHY DIESEL

PUTS MORE POWER INTO THE JOB

MP Series Murphy Diesel engines and power units are available in sizes from 105 to 320 HP with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 227 K.W.

MURPHY DIESEL COMPANY

5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

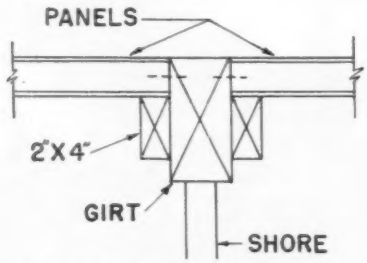
Throughout the Nation

Slab Forming

Symons Steel-Ply Forms Used Twice Per Month

. . . Material Costs Reduced to 10 Cents a Square Foot

Slab forms were stripped in 10 days without disturbing the support shoring; still met specifications calling for 28 days of slab support.



2 x 4's bolted to girt are removed, for ease of stripping.

When constructing apartments on the campus of Stanford University, Howard J. White, Inc. had one big problem . . . how to reduce slab-forming costs. Symons Steel-Ply Forms were the answer.

4 x 6 girts, laid longitudinally with the floor slab, are first set in place on shores and flush with the bottom of the slab. When the slab is poured, it bears directly on the timber girt. Next, 2 x 4's are bolted to the girt to form a ledge. Symons 4 ft. Steel-Ply Panels are dropped in place on the 2 x 4 ledge. No connecting hardware is used . . . carpenters drive a nail through a form-hardware opening to the girt on each panel so that when the 2 x 4 ledges are removed, the panels will not fall.

For the complete story on *slab forming*, just send in your request. Symons Steel-Ply Forms are rented with purchase option.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Ave., Dept. M-O, Chicago 39, Ill.

Warehouses Thruout the U.S.A.

MORE **SAVINGS** FROM **SYMONS**

ENGINEERING NEWS-RECORD

EIGHTY SEVENTH YEAR OF PUBLICATION

A McGraw-Hill Publication • 330 West 42nd Street, New York 36, N.Y. • LOngacre 4-3000

Editor, Waldo G. Bowman

Managing Editor, **Arthur J. Fox, Jr.**

Senior Editors, **Frederick S. Merritt, James B. Sullivan, Leo J. Ritter, Jr.**

Transportation—Roads, Railways, Airports, Pipelines, Ports
Leo J. Ritter, Jr., Edward M. Young, Jr., Joseph F. Wilkinson

Buildings—Commercial, Industrial, Housing; Codes, Specifications
Frederick S. Merritt, David B. Hill, Marianne Friedland C. W. Griffin, Jr.

Water—Sanitation, Water Supply, River Control, Power, Irrigation
James B. Sullivan, William W. Jacobus, Jr., Marie Jensen

Business—Management, Labor, Finance, Markets, Contracts, Economics
Robert J. Stinson, Charles J. Harding

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.* (*MOhawk* 4-5800)
Martha Alexander, *Staff Assistant*
Laurens L. Wise, *San Francisco, 68 Post St.* (*DOuglas* 2-4600)
Anne Garcia, *Staff Assistant*

Copy—Production
Irwin Landau, Nancy Parkes, John C. Greenough, Robert M. Echols

Presentation
Harry W. Jensen, Robert G. Young

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra, Marie Moravsik
Eleanor Queret, Francine Todisco, Helene Wahlers, Arlene Spielman
James Webber, Ruth Carlson, *Economics*
William P. Larkin, *Prices, Wages, Indexes*
Evelyn Huber, Edith Ostwald, *Statistics*
D. Arlene Ricker, *Unit Prices*

Editorial Research and Indexing
Eva Glerat, Rene Hay, Jane Jacobson

Consulting Editors: **Van Tuyl Boughton, Nathan A. Bowers**

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C. (*REpublic* 7-6630), George B. Bryant, Jr., Chief, Gloria R. Jennings, Alan Adams, Glen Bayless, Roy Calvin, Herbert Cheshire, Anthony DeLeonardis, John Donaldson, Jay Flocken, Boyd France, Clyde Henning, Don Loomis, Daniel McCrary, Gladys Montgomery, Arthur Moore, Burkey Musselman, Seth Payne, Dean Reed, Mort Reichek, Margaret Reid, Caroline Robertson, Thomas Russell, David Secrest, Richard Smith, Vincent Smith, Harry Vandernoot.

Domestic News-Bureaus: Atlanta—1375 Peachtree St., B. E. Barnes, Chief, Frances Ridgway; **Chicago**—520 N. Michigan Ave., Stewart Ramsey, Chief, Bruce Cross, Sheila Rowe; **Cleveland**—55 Public Square, Arthur Zimmerman, Chief, Violet Forsha; **Dallas**—901 Vaughn Bldg., Marvin Reid, Chief, Lorraine Smith, Mae Brown; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Sally Ayling, Wesley Perry, Jr., Del Yannatta; **Los Angeles**—1125 W. 6th St., Kemp Anderson, Jr., Chief, Carl Havighorst, Michael Murphy, Marvin Petal, Bill Wallace, Mary Williams, Barbara Lamb; **San Francisco**—68 Post St., Jenness Keene, Chief, Donald Winston, Alison Lunt; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: London—John Shinn; **Paris**—Robert Farrell; **Mexico City**—Peter Weaver; **Bonn**—Pete Forbath; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Rio de Janeiro**—Leslie Warren; **Caracas**—John Pearson; **Moscow**—Ernest Conine.

Correspondents: In 70 principal U. S. cities and 70 cities throughout the world.
Director of News Bureaus: John Wilhelm; **Managing Editor, Margaret Ralston.**
McGraw-Hill Economics Department: Douglas Greenwald, Manager.

Publisher, Robert F. Boger

MEMBER

ENGINEERING NEWS-RECORD, Vol. 166, No. 3, January 19, 1961

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Printed at Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. Publisher reserves the right to refuse unqualified subscription.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail postage paid at Albany, N. Y. Printed in U.S.A. Title registered in U.S. patent office.

©Copyright 1961 by McGraw-Hill Publishing Co., Inc. All Rights Reserved. **UNCONDITIONAL GUARANTEE:** Our primary aim is to provide subscribers with a useful and valuable publication. Your comments and suggestions for improvement are encouraged and will be most welcome. The publisher, upon written request, agrees to refund the part of the subscription price applying to the remaining unfilled portion of the subscription—if editorial service is unsatisfactory.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify, publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Fulfillment Manager, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

A REAL ROCK SHOVEL... doesn't just happen!

THE MODEL 80D

THIS is a Northwest 80-D—a 2½ yd. shovel in a heavy rock cut on one of the west mountain roads. It's built for rock—proved in rock work not only from Florida to Alaska and from Maine to California but all over the world. The 80-D is the dependable workhorse of the 2½ yd. field and it is the choice of leading contractors whose business is moving rock. Northwest *made it* a real Rock Shovel. It didn't just happen!

Take a look at it! The solid cast alloy Steel Machinery Bases with cast alloy steel Machinery Side Frames would be massive in a machine of greater capacity. They take the shock of rock digging and eliminate constant rebuilding. The Crowd—different—Dual Independent, an Automatic Crowd *plus* an Independent Crowd—utilizes force most independent crowds waste—handles the tough digging with greater ease—makes easy digging easier and gives greater output. With the big Uniform Pressure Swing Clutches there's no jerk! No grab! Just a smooth swing that makes it easy to spot the load. There's the Feather-Touch Clutch Control that gives the true feel of the load in nudging the teeth under a big one or in probing a partly shot ledge of rock. There's the Cushion Clutch that eliminates the shock overload on operating mechanism, increases cable life, and makes ample power safe. And finally—plenty of power to get the rock out!

It's a rock rig through and through with the advantages that assure output—not just for today—but for tomorrow, month after month.

There is a lot more to tell you. Details make equipment. Dig into them. A Northwest man is at your service.

NORTHWEST

CRANES • SHOVELS • DRAGLINES
PULLSHOVELS • TRUCK CRANES

3/4 to 3 Cu. Yd. Capacity

S-80-22-LC

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

LUBE LOGIC Five ways to

Now's the time for battery check-ups

With cold weather ahead, your batteries will soon work harder than ever. Here's how you can help make sure they're up to it:

Inspection

- Inspect battery case for cracks and leaks. See that vents in cell caps are open.
- Check battery posts and cable clamps for looseness, breakage or corrosion.
- Using distilled water, bring electrolyte in each cell up to level indicated in cell opening.

Hydrometer test for specific gravity

- Use a temperature-corrected hydrometer to test the state of battery charge. Make sure battery has not been recently fast-charged, nor water added.
- Draw enough fluid from each cell to raise float off the bottom of the hydrometer tube. Holding hydrometer straight up-and-down, take eye-level reading of the neck of the float. Repeat for each cell.
- Note the temperature, and correct hydrometer reading by subtracting 0.004 from the reading for each 10°F. below 80°F. (Example: If hydrometer reads 1.280, and temperature is 70°F., corrected reading would be 1.280 – 0.004 or 1.276.

Normal state of charge for 12-volt battery is 1.260 to 1.280 specific gravity. For a 6-volt battery, 1.265 to 1.290 specific gravity.

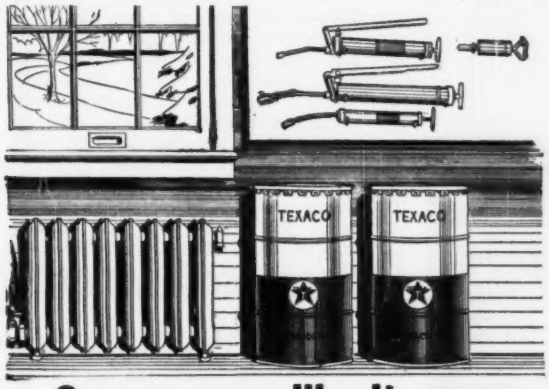
LEADING CONTRACTORS—EVERYWHERE—RELY ON TEXACO LUBRICATION

▲ **Isbell Construction Company** bulldozers remove reefs from river channel on Truckee River Flood Control project near Sparks, Nev. Isbell heartily endorses Texaco's Simplified Lubrication Plan.

◀ **Interstate Highway 80 Project** at Colfax, Iowa. Texaco Engineer E. A. Rolwes (right) works closely with Mott Construction Company on the important assignment of keeping equipment on the job and maintenance costs low.

▲ **Ledbetter-Johnson** gouges out largest rock cut (306 ft.) east of Rockies in highway project near Dalton, Ga. This company uses Texaco lubricants to keep their equipment on the job . . . their costs down.

ease winter maintenance



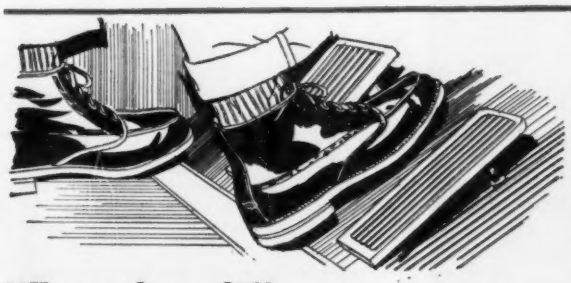
Grease guns like it warm

Store grease guns this way, properly racked to avoid damage, and they'll give you much better service. Incidentally, lubricants like to be stored warm, too.

Warm up the guns if they're too cold to pump the lubricant. Best way is to bring them into a warm place far enough in advance of use. Don't ever attempt to warm them up by direct application of heat.

Save the engine– not the anti-freeze

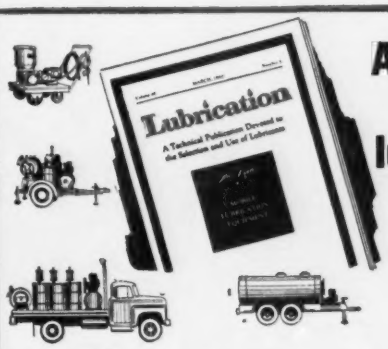
Go slow on using last year's anti-freeze. Although it might still give good protection against freezing, chances are those chemical additives that protect the cooling systems of your engines against rust and corrosion have lost their punch. Your best bet, after draining and thoroughly flushing the radiators, is to fill them up with fresh new anti-freeze – such as Texaco P-T Anti-Freeze.



"Easy does it"... after an oil change

When an engine's crankcase is drained – so is the oil pump's intake sump and pipe. And when the engine starts up, the oil pump must first suck up a lot of air before it starts chewing oil.

To avoid possible damage to the engine, idle it first at low speed. The oil pressure should begin picking up in a matter of seconds and reach normal readings within several minutes. Wait until it does – before you start working the engine.



All about mobile lube rigs

– How to make good lube rigs
– How to use lube records to make rigs more valuable
– Special purpose lube rigs
– Pros and cons of mobile and centralized lubrication

These are just a few of the facts about mobile lube rigs you'll find discussed in the March 1960 issue of Texaco's *Lubrication* magazine. We've devoted the whole issue to it –and we'll send you a copy *free*. Write today to Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. NR-22.

TEXACO LUBRICATION ENGINEERS

From time to time, we'll bring you "sleepers" like these–little angles that can mean big savings in time and money. But for any specific lubrication problem, call on your local Texaco man. He's your *best* source of money-saving lubrication ideas. Remember, "Lubrication is a major factor in cost control."

Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.–NBC-TV

TEXACO

Throughout the United States
Canada • Latin America • West Africa

Tie those **BIG JOBS** together

with **DYSON** Large Fasteners

1¼" BOLT DIAMETER AND UP

DYSON LARGE FASTENERS are uniquely qualified to help you tie together large construction jobs. These giant fasteners (1¾" bolt diameter and up) are real cost-savers, speeding up assembly of large construction and machinery units. Made in our own plant under the supervision of Dyson large fastener specialists, they offer unequalled ease of assembly and high strength factors to provide positive fastening.
For details on the wide variety of Dyson large fasteners available, write for Bulletin 160 today.

NEW BULLETIN ON LARGE FASTENERS
Every engineer needs this free digest of large fasteners.

Joseph Dyson & Sons, Inc., 5155 St. Clair Ave., Cleveland 3, Ohio, HE 1-6157

DYSON

Reader Comment

Data Wanted

SIR—As the result of a fire which destroyed the Administration Building of the Army Corps of Engineers Waterways Experiment Station, Vicksburg, Miss., in October, the station lost much valuable equipment and files.

The losses included an IBM 650 computer valued at $400,000; all printing equipment; the entire technical library collection of more than 75,000 items; the library reference catalog card index of 275,000 cards; files of periodicals; and certain literature research tools as the annual ENGINEERING INDEX.

Many items in the collection, including the recent years of the ENGINEERING INDEX, are out-of-print and not replaceable through the usual trade channels.

Readers of ENGINEERING NEWS-RECORD who have or know of surplus publications in the fields of hydraulic engineering and soil mechanics are requested to contact the Waterways Experiment Station Library, Vicksburg, Miss.

COL. STANLEY T. B. JOHNSON
Chief, Technical Liaison Division
Office of the Chief of Engineers
Washington, D. C.

Aluminum Clear Through

SIR—A recent article relative to bridge rails of aluminized steel (ENR Nov 17, 1960, p. 86) said New York State was using standardized sections of aluminum-coated welded steel tubing for bridge railings. As far as we can determine from our records, no such material has been used for bridge railings.

In reference to the particular bridge in question, located at Philadelphia in Jefferson County in New York State, the railing was constructed in accordance with our specifications, Item AL, Aluminum Railing. The posts in the structure are cast aluminum and the railings extruded.

The material in this railing was furnished by the Aluminum Co. of America and the general contractor for the project was Ador and Booth, Inc., of Watertown, N. Y.

C. F. BLANCHARD
Deputy Chief Engineer
Department of Public Works
New York State

(Reader Comment continued p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

1 Floor
Every 3 Days with

REINFORCED CONCRETE

1550 Lake Shore Drive Apartments, Chicago, Illinois
Architects and Engineers: Shaw, Metz & Dolio, Chicago
General Contractors: Crane Construction Company, Inc., Chicago

The top thirty stories of the 1550 Lake Shore Drive building were placed at the rate of one story every three days during a regular five-day week. This new thirty-five story building is the second tallest monolithic reinforced concrete frame building in the United States.

Staying on schedule is no problem when you build with reinforced concrete. The simplicity of monolithic construction—with floors and frame placed simultaneously—permits other trades to follow closely behind and finish their work on schedule, assuring early completion and occupancy.

On your next building specify reinforced concrete. You will get the benefit of savings in time and money.

Concrete Reinforcing Steel Institute
38 South Dearborn St., Chicago 3, Illinois

19-6

Save on construction costs with the new '61 FORD TRUCKS

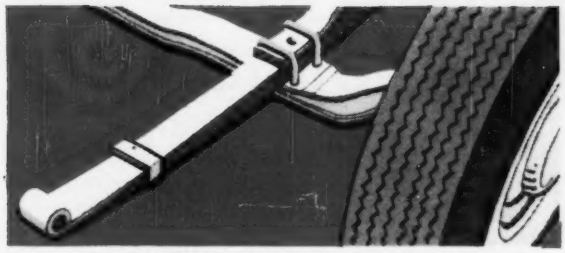
SAVE FROM $31 TO $157 ON PRICE* ALONE WITH FORD'S F-100 STYLESIDE PICKUPS

Contractors everywhere are finding that the half-ton Ford Styleside is priced below all other comparable pickups! And these rugged pickups are designed to keep right on saving with lower maintenance and operating expenses. Their durable, one-piece cab-and-box construction provides increased rigidity and eliminates a major source of rust and corrosion. Not only does the sheet metal last longer with this stronger body, but it also contributes to a quieter ride.

And you can save more . . . because you can carry more on every trip. Styleside bodies are longer and wider with loadspace increased as much as 16%. In addition, wheelbases have been lengthened 4 inches and this combined with the improved shock absorbers gives a ride that's unexcelled in its field—proven by scientific Impact-O-Graph tests. For construction work the angle of approach has been increased so you can climb steeper drives or go over deeper ditches or gullies. Ford also offers America's lowest-priced* 4 x 4 with big 8-ft. box, the F-100 Flareside.

And you can save on operating expense! Ford's Mileage Maker 223 Six is standard on all conventional pickups to keep gas costs low. The economical 292 V-8 is available for jobs requiring extra power. Both engines are equipped with Ford's Full-Flow oil filter that lets you get 4,000 miles between oil changes.

**Based on a comparison of latest available manufacturers' suggested retail delivered prices*



SAVE UP TO $150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles, savings can add up to $150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's savingest two-tonners offer a big 262 Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves, and durable pyramid-type connecting rods. And Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

You also save with other new durability features like the more rugged frame, stronger radiator with new lock-seam construction, improved cab and chassis electrical wiring, plus longer, easier-riding and more durable rear springs. Ford's parallel ladder-type frame with standard 34-inch width allows you to install new or transfer your present special construction bodies quicker and for less. Also, the frame drop in the cab area lowers cab height . . . makes for easier entry.

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . . ▶

Save on construction costs with the new '61 FORD TRUCKS

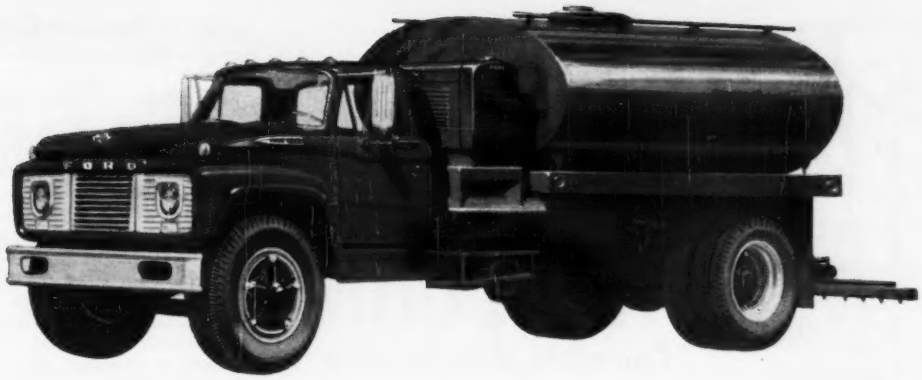
FORD HEAVIES SAVE WITH DOUBLE THE CAB, SHEET METAL AND RADIATOR LIFE

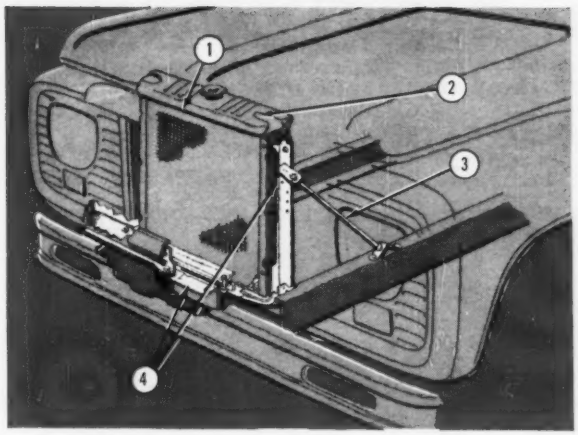
Ford F-Series Heavy Duty models are especially designed for the rugged terrain and tough conditions generally found on construction jobs. Their new independent mounting system for cab and radiator effectively separates both from adjacent sheet metal assemblies for much greater durability. And radius rod-leaf type rear springs provide better axle alignment, a smoother ride and longer spring life.

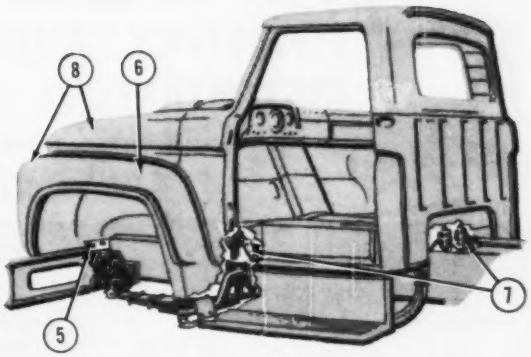
The electrical wiring system has been improved for greater reliability. Chassis wiring is fastened within the protection of the frame web, away from mud, ice and snow. And Ford Truck frames have been engineered to make the mounting of bodies and special equipment easier. A new 212-inch wheelbase model is available to accommodate extra-long bodies.

Save with Ford T-Series Heavy Duty Tandems for exceptional durability, big payloads and low operating expenses. Ford T-700, T-750 and T-800 Tandems have rugged double-channel frames that are built to take tortuous off-road treatment. And they provide a wider range of chassis options so you can choose the right power train and load-carrying components for any job. Eaton and Timken rear axles are now available in bogie assemblies with 22,000-, 28,000-, 30,000- and 34,000-lb. capacities. And lightweight aluminum walking beams, wheels and gas tanks are available to keep chassis weights low . . . payloads high.

Ask your Ford Dealer about Ford's full tandem line . . . including Super Duties with 38,000-lb. bogies for up to 51,000-lb. GVW!







① **Save with Ford's exclusive "lock-seam" radiator construction** that doubles the solder area at key seams for greatly increased strength and longer radiator life.

② **Save with heavier-gauge metal on radiator tank and header.** Tanks and header have thicker walls to resist vibration, jolts and corrosion for greater reliability.

③ **Save with independent radiator mountings,** separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.

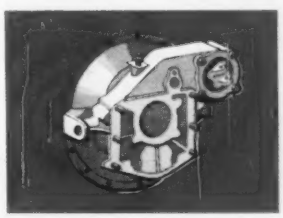
④ **Save with "horse collar" mounting** for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.

⑤ **Save with independent fender mountings.** Fenders are bolted to a rubber-cushioned transverse bracket at the front and a frame-mounted bracket at the rear. This mounting, independent of both cab and radiator, eliminates stress transfers for increased fender life.

⑥ **Save with removable fenders.** The quick and easy removal of only 8 bolts per fender provides faster service accessibility to the engine area, saving valuable maintenance time.

⑦ **Save with new 3-point cab mounting system** for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.

⑧ **Save with 42% heavier-gauge sheet metal** in fenders, hood, cab floor pan and toeboard for greater strength, greater durability.

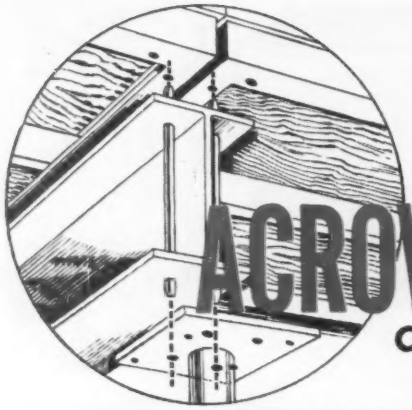


Save with Ford's new Full-Torque flywheel power take-off . . . now available on T-750's and up, to power construction equipment like transit mixers. It's much simpler and more efficient than long, complicated hookups needed with the front-end drives. And the flywheel PTO is lighter in weight—only 105 pounds—for greater payloads.

FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, *Ford Motor Company*



ACROW V FORM

Complete slab-forming SYSTEM gives you

POSITIVE...AUTOMATIC...
INSTANTANEOUS ALIGNMENT

and they save as much as
45% ON LABOR COSTS

Literature B-10 On Request

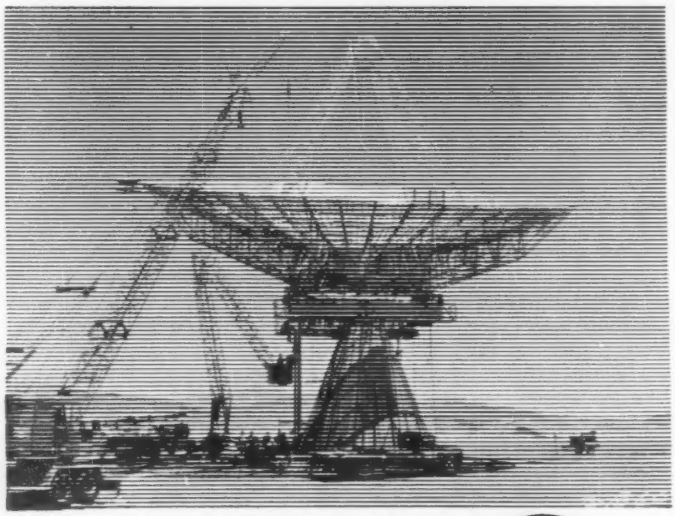
ACROW CORPORATION OF AMERICA
231 WASHINGTON AVENUE, CARLSTADT, N. J.
In New Jersey: Phone WEbster 3-0450
In New York: Phone LOngacre 4-8753

ACROW Denver, Inc., 1035 So. Huron St.
Denver, Colorado • Phone SP 7-5486

SYSTEM consists of only three basic parts: an ACROW SHORE, a support beam and a form panel. All three can be quickly assembled by any inexperienced workman. Nothing can possibly go wrong in the assembly; there is nothing that can come loose.

ACROW V FORM gives you speed, rigidity and safety in one combination. They are made in standard component sizes for every type of slab construction...Get all the facts.

NEW YORK · CHICAGO · DENVER · TORONTO · MONTREAL



ALWAYS ON THE ALERT

A call from the Jet Propulsion Laboratory for modification of this tracking antenna was answered with immediate action by Pacific Crane and Rigging. Specialized equipment and experienced crews from P. C. & R. stand ready to serve government and industry on projects from emergency repairs to complete mechanical installations.

Pacific Crane & Rigging Co. MECHANICAL CONSTRUCTORS

NEvada 6-9213
MEtcalf 0-6020
6855 E. Rosecrans Ave., Paramount, Calif.

POLE RIGGING • MECHANICAL PIPING • CRANE SERVICE • SPECIAL PROJECTS • MISSILE EQUIPMENT • JACK & ROLLER RIGGING • EQUIPMENT SETTING

. . . Reader Comment

Attitude, Plus . . .

SIR—Your editorial "A Matter of Attitude" (ENR Dec. 1, 1960, p. 128) compares construction of the BMEWS bases and the missile sites.

One favorable factor which contributed to the good results at BMEWS was that the same Contracting Officer who was responsible for construction was also responsible for design. As a result, there was an essential feed-back of information as to the construction implications of proposed changes. This influenced all changes in design after construction began. The systems contractor, Radio Corporation of America, was also most receptive to solutions which would minimize the effect on construction of essential changes inherent in the program of concurrent systems development and facility construction.

The Air Force staff involved in construction was very small and very cooperative.

H. B. GOYETTE
Chief, Engineering Division
Eastern Ocean District
U. S. Corps of Engineers
New York, N. Y.

For Your Calendar . . .

National Society of Professional Engineers, winter meeting, Hotel Fort Des Moines, Des Moines, Iowa, Feb. 9-11. Write: Kenneth E. Trombley, National Society of Professional Engineers, 2029 K St., N. W., Washington 6, D. C.

American Concrete Institute, annual convention, Chase-Park Plaza Hotels, St. Louis, Mo., Feb. 20-23. Write: Tom Akas, American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.

Associated General Contractors of America, annual convention, Statler Hilton Hotel, Boston, Mass., Feb. 27-March 2. Write: C. I. Mehl, Associated General Contractors of America, Munsey Bldg., Washington 4, D. C.

National Lighting Exposition, New York Coliseum, New York City, March 5-8. Write Dorothy Ross Associates, 166 W. 58th St., New York, N. Y.

Steel Founders' Society of America, annual meeting, Drake Hotel, Chicago, Ill., March 13-14. Write: George K. Dreher, Steel Founders' Society of America, 606 Terminal Tower, Cleveland, Ohio.

12th Western Metal Congress, Western Metal Exposition, American Society for Metals, Ambassador Hotel and Pan-Pacific Auditorium, San Francisco, Calif., March 20-24. Write: James C. Nelson, American Society for Metals, Metals Park (Novelty) Ohio.

Symposium on Ground Water Contamination, U. S. Public Health Service, Sheraton-Gibson Hotel, Cincinnati, Ohio, April 5-7. Write: Director, DHEW, PHS, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

Southern Municipal and Industrial Waste Conference, Duke University, Durham, N. C., April 6-7. Write: Edward H. Bryan, Duke University, College of Engineering, Durham, N. C.

Annual Welding Exposition, American Welding Society, New York Coliseum, New York City, April 18-20. Write: Arthur L. Phillips, American Welding Society, 33 W. 39th St., New York 18, N. Y.

22 DAYS AHEAD OF SCHEDULE!

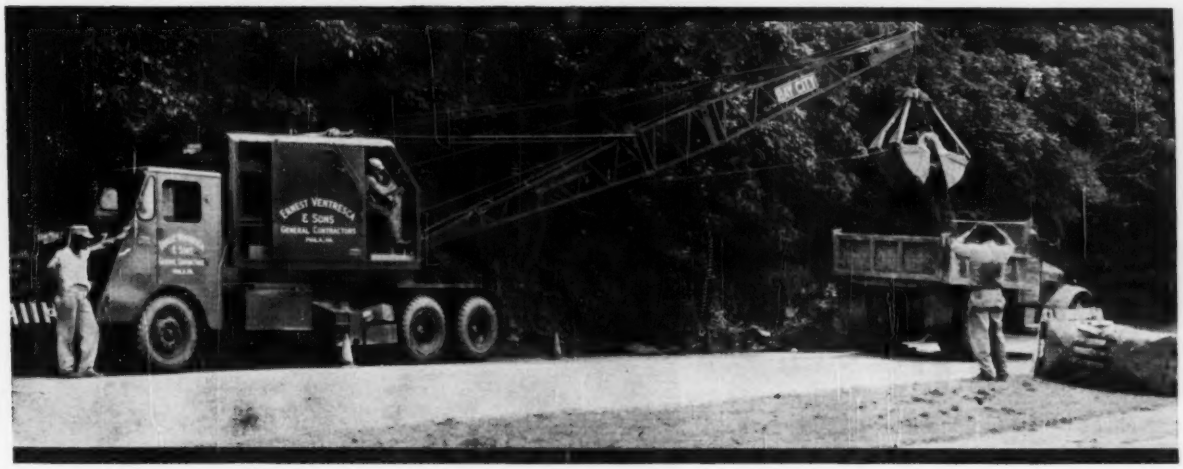
CRANEMOBILE®

COMPLETES JOB IN 45% OF WORKING DAYS ALLOWED

When Ernest Ventresca & Sons, Inc., Philadelphia, was awarded a contract for improving an existing storm drainage system in that city, the company was given 40 working days to complete the job. It included the installation of short pipe runs at regular intervals — 2,000 feet of 15 and 18 inch concrete pipe were laid all told — in open ditch and tunnels along a four-mile stretch of East River Drive, the city's main traffic route along the Schuylkill River.

Ventresca & Sons used a **BAY CITY** 25-ton CraneMobile to dig ditch, set pipe, and handle backfilling. Despite poor weather and traffic congestion (the drive remained "open" 90% of the time), the entire project was completed almost a month ahead of schedule. Mr. Ventresca has this to say about **BAY CITY:** "Performance is a must in my work — I get it with a **BAY CITY.** That's why I'll go **BAY CITY** again."

CraneMobile features are "performance-proved" not only on "bread and butter" earthmoving jobs like this but on high, heavy lifts and long boom work as well. Accurate setting of high steel or precise

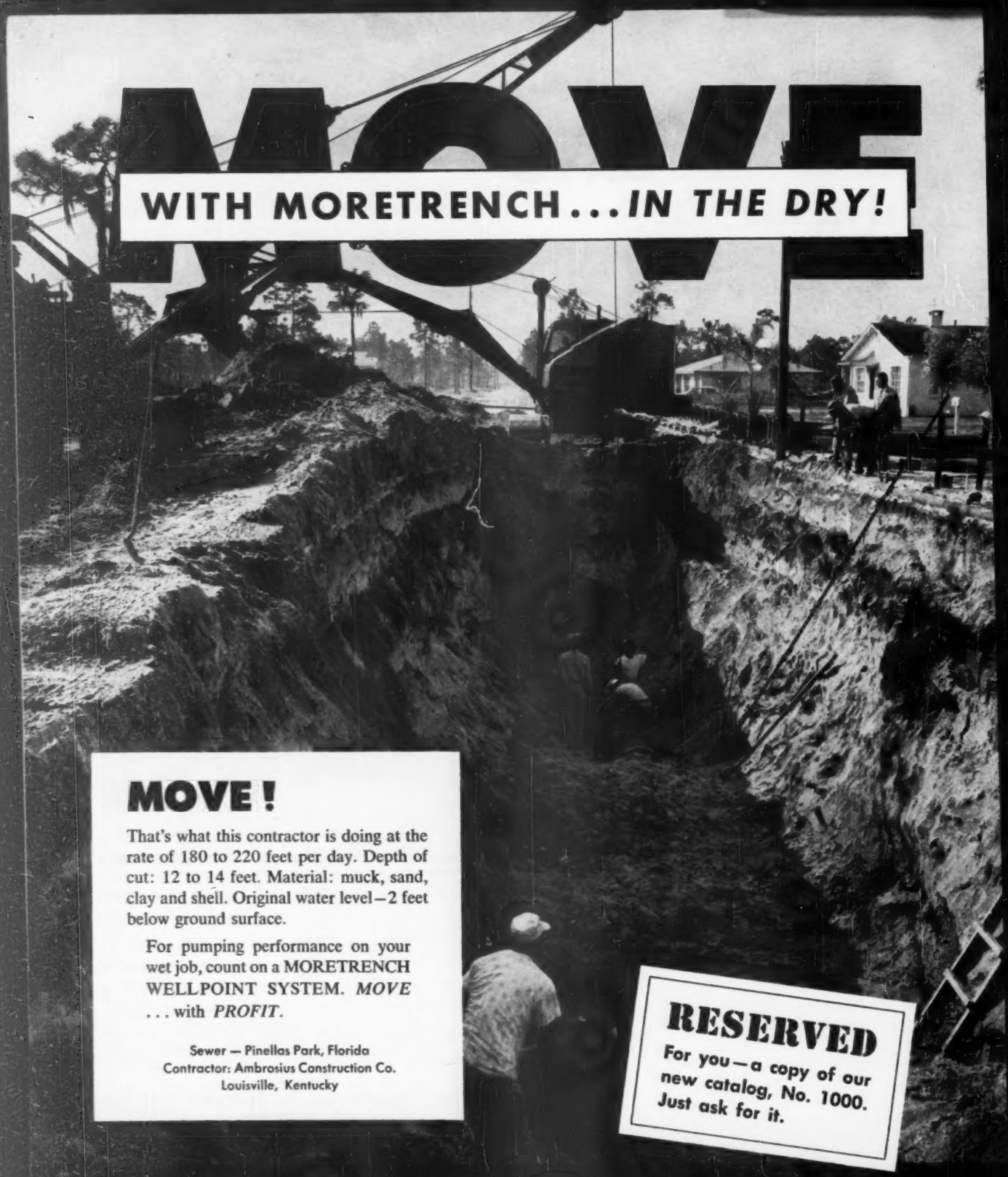


spotting of concrete beams is constantly assured by CraneMobile controlled lowering under power. Precise control at all boom angles is provided by the CraneMobile power-controlled independent boom hoist. The boom alone, or boom and load, can be raised or lowered simultaneously with any other operation. The hi-collapsible gantry, pin-connected boom and jib, demountable counterweight, and removable outrigger assembly permit rapid strip-down for between-job moves.

CraneMobiles are available in 25-, 30-, 35-, and 40-ton sizes, mounted on specially designed BAY CITY-built 6 x 4 or 8 x 4 carriers. For details and the name of your nearest dealer, write today.

BAY CITY SHOVELS, INC.
2611-B Center Ave.
BAY CITY, MICHIGAN

a subsidiary of Unit Crane & Shovel Corp.



MOVE!

That's what this contractor is doing at the rate of 180 to 220 feet per day. Depth of cut: 12 to 14 feet. Material: muck, sand, clay and shell. Original water level—2 feet below ground surface.

For pumping performance on your wet job, count on a MORETRENCH WELLPOINT SYSTEM. *MOVE* ... with *PROFIT*.

Sewer — Pinellas Park, Florida
Contractor: Ambrosius Construction Co.
Louisville, Kentucky

RESERVED
For you—a copy of our new catalog, No. 1000. Just ask for it.

Moretrench Corporation

389 Main Street
Hackensack, N. J.
HUbbard 9-7676
New York Tel.: CO 7-2283

4900 S. Austin Ave.
Chicago 38, Illinois
PORtsmouth 7-4212

7701 Interbay Blvd.
Tampa 9, Florida
TAmpa 61-1881

315 W. 25th St.
Houston 8, Texas
UNderwood 4-7774

Rockaway
New Jersey
OAkwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington
CANADIAN REPRESENTATIVE: Geo. W. Crothers Limited, Toronto, Ontario
BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro

ENGINEERING NEWS-RECORD

Vol. 166, No. 3 January 19, 1961

Number of copies printed in this issue 86,835

CONTENTS

No Change in Interstate Cost Estimate..... 19
Ike Asks $7.9 billion for construction in '62.... 20
Wider Anti-Discrimination Rules Urged..... 21
Base Price May Go Up $9.4 million..... 21
Road Problems Require Imaginative Solutions... 22
Railroad for Automobiles..... 23
Wind and Sea Destroy Texas Tower..... 23
Bribery Expedites Plan Approval 24
Interior Gets a Water Man..... 24
Beavers Gather to Fete Four..... 26

FEATURES

Thailand Sets Construction Pace..... 30
Spectacular Cuts and Fills Mark Coast Road.... 38
Steel Research Gets Broad View at Bethlehem.. 40

NEW PRODUCTS

Bucyrus-Erie Adds Power Shovel..... 53
Lab Compactor for Soil Tests..... 53

BUSINESS AND FINANCE

Insulation for the Housing Market..... 75

LABOR

NLRB Must Decide Jurisdiction..... 79
Dispute Settled at Ford Project..... 79
More Labor Curbs?..... 80

Reader Comment.... 6
Calendar 12
Washington Observer 17
Unit Prices 57
Materials Prices 61
Construction Reports. 64
Statistics, Indexes .. 74
Editorials 92

Picture Credits

21—Kaiser Steel Corp.; 22—George Kalec; 23—Westinghouse; 24—Wide World; 36—McGraw-Hill World News; 38, 38-39 center—Oregon State Highway Dept.; 39—ENR.

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in the Applied Science & Technology Index, Business Periodicals Index and the Engineering Index.*

THE CONSTRUCTION WEEK

SO FAR, SO GOOD—Heavy construction contract awards for the first three weeks total $1.4 billion—36% above 1960's like period. Federal work, which started to climb right after the election, is still moving—it's 19% above '60 at $181.4 million. Public work, with volume of $735.5 million, is 50% ahead of last year; private is 24% ahead with volume of $655.9 million.

WASHBOURNE HEADED OUT?—Oklahoma's Gov. J. Howard Edmondson reportedly approves a move by a group of state senators to oust Lee B. Washbourne as director of highways. The governor is said to favor former director H. E. Bailey for the post, but a majority of the state Senate is against the idea.

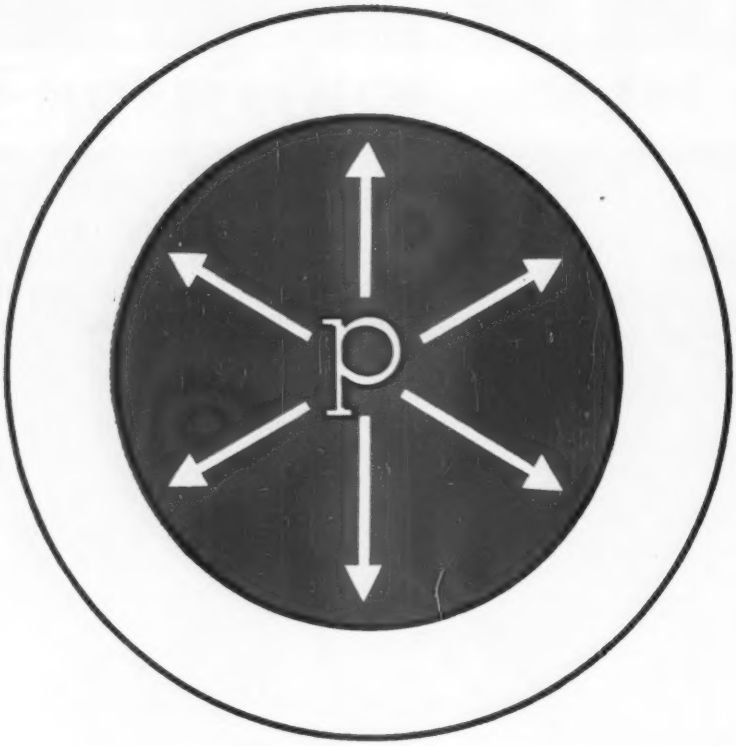
ANOTHER CHANCE FOR MINUTEMAN—The first Minuteman ICBM installation, at Malmstrom Air Force Base, Mont., may get off the pad yet. Corps of Engineers Ballistic Missile Contruction Office stopped the project when it opened bids for the job and found the low was 55% higher than its $50-million estimate (ENR Jan. 5, p. 28). CEBMCO revised plans for the base this week and asked pre-qualified bidders to submit proposals for a negotiated contract.

COMPUTER'S COMPUTER—For flood-control operations in the Kansas River Basin, University of California scientists are designing and bulding an electronic analog simulator they say will be the equivalent of about 50 analog computers working simultaneously. The apparatus will apply weather observations and predictions to help control a system made up of 1,000 miles of river channel and 14 flood-control reservoirs. The designers say a similar device could be built for any river basin for $100,000.

EMPLOYMENT DOWN AGAIN—An "unusually sharp decline" in construction employment occurred last month as the nation's total unemployment rose to 4.5 million—the highest December level since 1940. The December 1960 figure for construction employment was 2,530,000—323,000 under the November figure and 153,000 below the level of a year ago.

ROYAL VERSATILITY—H. R. H. Prince Philip, Duke of Edinburgh, who devoted the years prior to his marriage to a career as an officer of the line of the Royal Navy, has just been installed as president of Great Britain's Institution of Highway Engineers.

Annual Report & Forecast—In next week's issue the editors of ENR will review the significant events of 1960 and survey business and technical trends in construction for the year ahead. The survey's title: '61 Task—Volume With Profit.



Metallurgical Phenomena... and the metals to cope with them.

These are the stock-in-trade of the Lukens Application Engineer—whether the problem be one of pressure (symbolized above) or corrosion or abrasive impact or structural stress or high and low temperature. Investigation of the best steels for "problem" applications has been carried on for years by the Lukens Application Research team. We would welcome the opportunity to contribute the results of this research to your own design knowledge. Please contact us in your early design stages. Call collect: John D. Heffernan, Manager of Application Engineering, Extension 422, Lukens Steel Company, Coatesville, Pennsylvania. Or write: C-11 Services Building.

HELPING INDUSTRY CHOOSE STEELS THAT FIT THE JOB

WASHINGTON OBSERVER

- Columbia treaty in the Senate
- No replacement for Armstrong
- Public works task force docks

● **Ratification in the U. S. of the Columbia River treaty is up to the Senate now.** President Eisenhower signed it and appealed for an okay in his last days in office.

Mr. Eisenhower recommended that the Corps of Engineers set to work immediately on preconstruction planning of the structures the U. S.-Canadian treaty would permit. And to reassure local interests he asserted that the proposed storage reservoirs stemming from the Columbia treaty "will not interfere with the cycle for salmon and other fish." Details of the agreement are contained in the draft treaty that the White House sends to the U. S. Senate.

—

● **There is speculation that Mr. Kennedy may not name a replacement for Commissioner Ellis Armstrong in the Bureau of Public Roads.** The commissioner's function has been somewhat cloudy since 1956 when the office of Administrator was created with the start of the Interstate highway program. Since then, the Administrator has actually been boss of the bureau, acting as policy-maker, while the Commissioner has become a principal adviser, in charge of executing policy. Conflicts between the authority of the two officials still exist in the law. The Administrator is appointed by the President, while the commissioner is named by the Secretary of Commerce.

J. Stanley Baughman is expected to stay on as president of the Federal National Mortgage Association. He has held the job since long before Mr. Eisenhower came in, and is acceptable to the Democrats generally. Observers see no reason why incoming HHFA Administrator Robert C. Weaver would not approve.

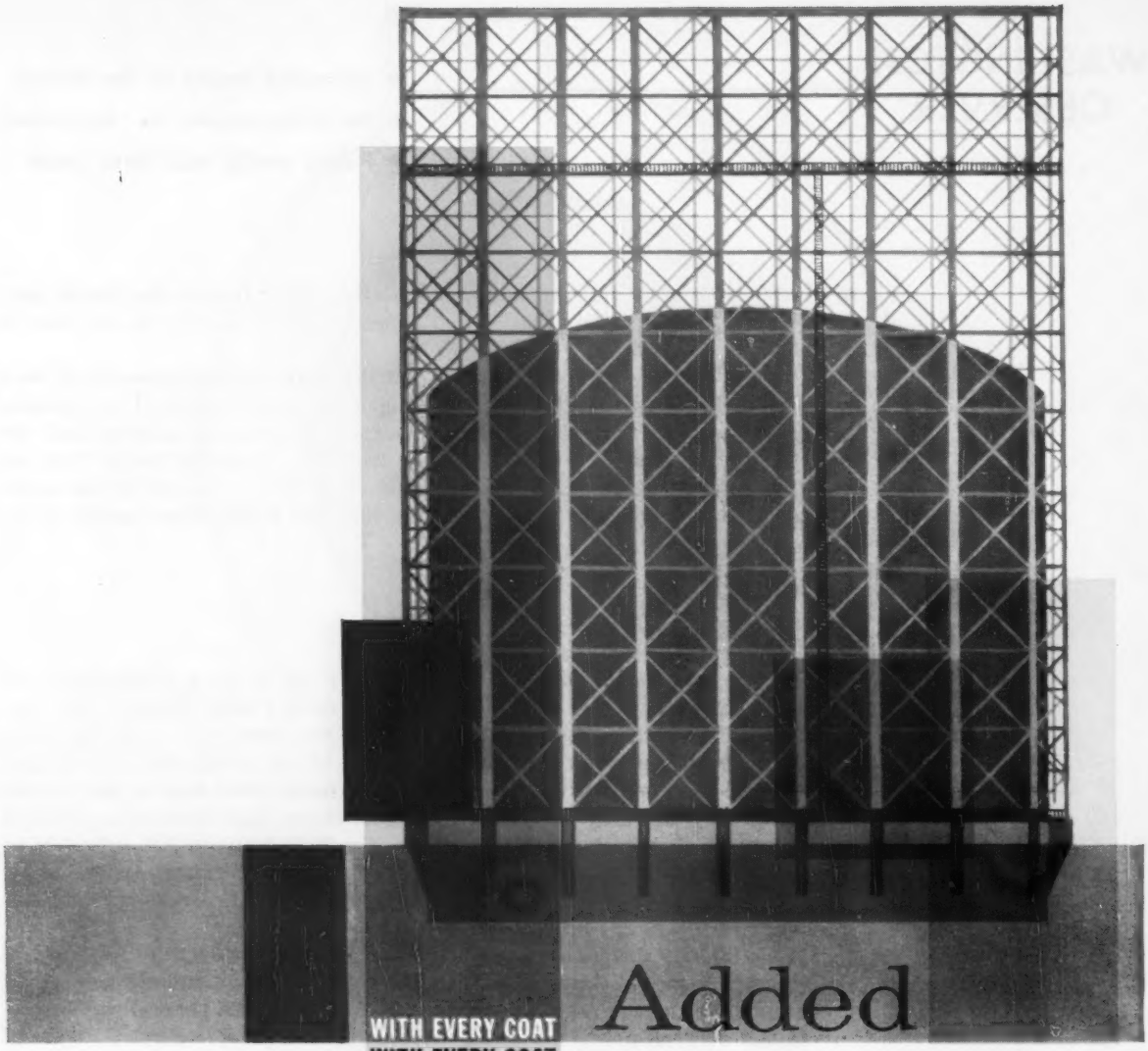
Neal J. Hardy is expected to become Federal Housing Commissioner to head up the Federal Housing Administration. He was an assistant administrator of HHFA until 1954, when he went to National Association of Home Builders as head of the national housing center.

Atom scientists and engineers have won their campaign to get a professional scientist to head the Atomic Energy Commission with the appointment of Glenn T. Seaborg, Chancellor of the University of California, Berkeley. Mr. Seaborg was a Nobel Prize winner in 1951. He will take over from John McCone.

—

● **A hint about Mr. Kennedy's public works policies comes from his task force on natural resources,** headed by Rep. Frank E. Smith (D., Miss.). Its report is a forerunner of recommendations due next week from the Senate Special Water Resources Committee, headed by Sen. Robert S. Kerr (D., Okla.).

The Smith report supports increased federal grants for sewage treatment plants under the Blatnik program, urges that federal waterways remain free from tolls or user charges and recommends highest priority for already authorized flood control and reclamation projects.



WITH EVERY COAT
WITH EVERY COAT
WITH EVERY COAT

Added Protection

Added protection is derived from incorporating lead in **every coat** of paint . . . from primer to finish coat.

For primers on structural steel, red lead paint has long been recognized as standard. Research has maintained this position by developing formulations with a variety of modern vehicles to meet every requirement of cost, drying time, surface condition and type of exposure.

But there are a number of lead pigments at the command of the engineer in his fight against corrosion. By taking best advantage of them all you get maximum protection at lowest cost—regardless of painting and exposure conditions.

In addition to time-proved anticorrosive primers like red lead and lead chromate and well tested surface coats with great durability when exposed to the weather like white lead and international orange, research has developed such pigments as the basic lead silico-chromate with interesting properties worth investigating.

Remember: Now you can get extra protection against corrosion by using the properly formulated lead pigmented paint **every coat** of the way. For information contact the Lead Industries Association, 292 Madison Avenue, New York 17, New York.

3058

No Change in Interstate Cost Estimate

- **Bigger roadbuilding machinery and heavy bid competition drive construction cost down 3%.**
- **But inclusion of new costs keeps BPR's new Interstate expense estimate at 1958 level.**
- **Bureau study advises non-users and heavy trucks pay more for federal-aid highways.**

Declining construction costs will save federal and state governments $1 billion in completion of the 41,000-mile Interstate highway network.

A Bureau of Public Roads survey of all 50 states disclosed a nationwide drop of about 3% in highway building cost.

BPR attributes this to the introduction of bigger and more efficient roadbuilding machinery and to recession factors that heightened bid competition.

The bureau reported this saving to Congress last week in the latest estimate of the total 15-year cost of the Interstate program.

The total proved to be identical with the one BPR gave to Congress in 1958—$41 billion, with $37 billion of that from the federal government.

Despite the $1-billion drop in construction costs, the new estimate is the same as the old one, because it includes costs that were not part of the earlier projection. These exactly offset the decline in construction expenses.

The charges included in the 1961 estimate that were not in the 1958 total reflect the costs of state highway planning and research and BPR administration and research. These were left out of the previous estimate because it was used solely for determining apportionments of federal Interstate funds to the states for fiscal years 1960, 1961 and 1962. And for this purpose, construction costs only were considered.

The other costs were wrapped into the new estimate, because it has to do more than provide a basis for apportioning funds for fiscal 1963, 1964, 1965 and 1966. It will also serve as a guide for Congress on what additional financing is needed if the Interstate program is to be completed on schedule by 1972. And in determining this, Congress must work with total costs.

The lawmakers must come up with an estimated $10 billion in new revenue if the original building schedule is adhered to. Otherwise, the program will have to be stretched out, cut back or financed on other than the present "pay as you go" basis.

The new cost estimate was transmitted to the House Public Works Committee, which will open hearings soon on the progress of the highway program. No date has yet been set.

The report also will be of interest to the House Ways and Means Committee, which must originate all tax legislation and which is expected to begin hearings specifically on the highway financing program early next month.

The bureau told Congress this week that non-users ought to pay about 8% of the cost of all federal-aid highway building. They now pay about 2%.

In addition, it said there is a "definite indication" that heavy-duty trucks should be paying "considerably more" than they do now.

These were the two major findings—and both were carefully hedged—made by the bureau in a 500-page report to Congress entitled "The Highway Cost Allocation Study."

Congress, in launching the Interstate highway program in 1956, ordered the study to help it make an equitable distribution of the tax burden, both between various types of vehicles and between both users and non-users who gain economic benefits from federal-aid roads. The new report, the fifth and final installment, will be considered first by the House Ways and Means Committee.

The BPR study contained research findings only and refrained from making any policy recommendations as to how the tax burden should be shifted.

The study said that non-users ought to share more by far in the cost of the federal-aid secondary road system than in the primary and Interstate systems. It assigned 28.4% as the non-user cost responsibility for the secondary system, 7.41% for the primary system and 5.37% for the Interstate program.

The report said, however, that these percentages were submitted for guidance only, because it was impossible to measure many of the economic benefits of federal roadbuilding.

As for heavy-duty trucks, the report emphasized that while there are clear indications they should carry more of the tax burden, its findings are preliminary and based on incomplete information.

The missing item, which will not be available until summer, is an analysis of the results of the AASHO road test in Illinois, designed to show what effect trucks of various sizes and weights have on differing types of highway construction and pavement.

The financing problem will be complicated again this year by demands that the government reimburse states for tollroads and certain free roads that have been incorporated into the Interstate system. Rep. Ed Edmondson (D., Okla.), already has re-introduced legislation to provide $4.3 billion in federal funds to make the reimbursement—a move strongly opposed by the outgoing Eisenhower Administration and BPR.

The Edmondson bill got nowhere in the past Congress and is not expected to in the new Congress. But its presence is a reminder that there is pressure on Congress to face up to the reimbursement issue.

BPR's new cost estimate was based on average low bid prices for construction contracted for in the 1959 fiscal year—the 12 months ending June 30, 1959. The cutoff date for estimating purposes was Jan. 1, 1960.

The bureau said $7,214 million had been obligated for spending as of that date. It estimated $32,036 million was required to finance remaining preliminary engineering, rights-of-way and construction costs—bringing total construction costs for the entire system to $39,250 million. It estimated the cost of state highway planning and research at $574 million, of BPR administration and research at $357 million and of contingencies at $819 million, for a total of $1.75 billion—making the grand total $41 billion.

The 1958 estimate included $40,294 million for construction and $706 million for contingencies—total also $41 billion. The exact difference in 1958 and 1960 construction estimates works out to $1,044 million.

Ike's last budget asks . . .

$7.9 Billion for Construction in '62

Budgeted for Construction

Fiscal year expenditures (in millions)

CIVIL WORKS	1961 Estimate	1962 Estimate
Federal Agencies		
U. S. Capitol	$45	$34
Federal Aviation Agency	131	150
National Aeronautics and Space Administration	90	106
Tennessee Valley Authority	158	221
Veterans Administration	63	66
General Services Administration	143	200
Department of Agriculture	59	60
Corps of Engineers—civil works	753	751
Department of Health, Education, and Welfare	37	30
Department of the Interior:		
Bureau of Reclamation	174	224
Bonneville Power Administration	22	17
Bureau of Indian Affairs	36	33
National Park Service	49	61
Other	22	31
Post Office Department	68	48
Department of State	20	23
Other	105	134
Total	**$1,974**	**$2,189**
Grants to State and Local Governments		
Federal Aviation Agency	$83	$82
Soil Conservation Service	36	51
Office of Education	63	57
Public Health Service	111	120
Other	44	18
Total	**338**	**329**
Loans to State and Local Governments		
Housing and Home Finance Agency	$127	$151
Bureau of Reclamation	15	25
District of Columbia	12	27
Other	6	6
Total	**$160**	**$209**
Highways and Other		
Grants, Bureau of Public Roads	$2,840	$2,995
REA Co-ops, Hospitals, College Housing, etc.	512	549
Other Buildings	5	5
Total Civil Works Construction	**$5,830**	**$6,275**
DEFENSE		
Military Construction	$1,360	$1,319
Atomic Energy Commission	237	264
Total Defense Construction	**$1,597**	**$1,583**
Total Federal Construction	**$7,427**	**$7,858**

Record federal construction outlays of nearly $7.9 billion estimated by President Eisenhower for fiscal 1962 almost certainly will be pushed to new heights by the Kennedy Administration even before the year begins next July 1.

Mr. Eisenhower asked Congress to approve spending totaling $80.9 billion in fiscal 1962, which would leave a budget surplus of $1.5 billion.

Just one program—federal aid for classroom construction—could come close to throwing the budget out of balance. Mr. Eisenhower urges such aid, but includes no funds for it. A Kennedy task force has called for $1.4 billion in the first year to help states and communities build new schools and augment teacher salaries.

Mr. Eisenhower's budget also is based on the assumption that Congress will approve his request to increase the gasoline tax to 4½ cents a gallon and repeal diversion to the Highway Trust Fund of the 5% excise on autos and auto parts.

This is as unlikely as is congressional approval of his request to increase the tax on aviation gasoline from 2 to 4½ cents a gallon and impose the same excise on now untaxed jet fuels. He says these receipts should be retained to pay for the federal airways system.

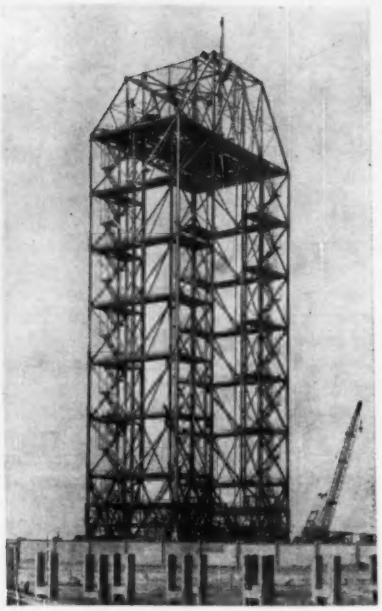
Despite a projected increase of $430 million in construction funds, Mr. Eisenhower's new budget maintains a tight spending rein on money for such items as homebuilding, college housing, hospitals and pollution control.

The chief spending boosts would go for the Tennessee Valley Authority, federal office buildings, urban renewal and the Bureau of Reclamation. TVA will spend an estimated $221 million for construction in fiscal 1962, including $24 million from appropriated funds and $197 million from power proceeds and revenue bonds.

The new budget continues the downward trend in military construction. Total expenditures are estimated at $1.3 billion, some $41 million under the current rate. But even more significant is a projected $168-million decline in military construction starts.

Military construction outlays include no new funds for Atlas ICBM bases, reduced funds for Titan ICBM sites but a big boost for Minuteman ICBM installations.

In the public works area, the Eisenhower budget recommends $11 million to initiate 37 new Army Engineer and reclamation projects that would cost more than $340 million to complete.



Saturn's Gantry Is World's Highest Mobile Structure

Steelworkers at Cape Canaveral are putting the finishing touches on a 2,800-ton, 310-ft-high tower to erect and service the Saturn, a spaceship that will be able to take a man on a trip around the moon and back to earth.

The Saturn tower is almost as imposing as the space vehicle it will serve.

It will be a self-supporting unit, equipped with its own power station, heating and air conditioning, water supply, intercom system, lighting facilities and three elevators.

Four 100-hp motors will move the tower in winds up to 46 mph. The tower rests on four 12-wheel carriages similar to railroad trucks and moves over two parallel standard gage railroad tracks. Shortly before the Saturn is launched, the tower will move to a safety zone 600 ft away.

When the tower is stationery, hydraulically operated pins secure it to anchor rails. The tower can stand hurricane winds up to 120 mph without guying. Hydraulic rams built into each carriage act as jacks to transfer the tower between anchor rails and traction rails.

Saturn is the country's major effort to build a ship to go deep into space or orbit as much as 12.5 tons of equipment around the earth. Eight Jupiter intermediate range ballistic missiles will comprise the first stage of the Saturn. This cluster of 60-ft-high rockets will produce a thrust of 1.5 million pounds.

Kaiser Steel Corp.'s Montebello (Calif.) Fabrication Division has a $3.9-million contract from the Corps of Engineers Jacksonville District to design, fabricate and install the tower.

Nixon committee's last report asks . . .

Wider Anti-Discrimination Rules

The President's Committee on Government Contracts, in its final report, urges that federal anti-discrimination contract policies be carried into the broad scope of grant-in-aid programs, including public works, housing, education and recruitment.

"Such programs involving public works construction alone cost almost $3.5 billion," it says, and "provide a wide range of employment opportunities which should be open to all qualified workers." The committee, headed by Vice President Richard M. Nixon, describes discrimination as America's "most destructive social and economic problem."

The group also asks Congress to make it a permanent commission with regularly appropriated funds. A similar request has been rejected three times in the past two years. But the committee says such a move would give it much more authority.

"Overt discrimination, in the sense that an employer actually refuses to hire solely because of race, religion, color or national origin, is not as prevalent as is generally believed," says the report.

"To a greater degree, the indifference of employers to establishing a positive policy of non-discrimination hinders qualified applicants and employees from being hired and promoted on the basis of equality. The direct result of such indifference is that schools, training institutions, recruitment and referral sources follow the pattern set by industry."

Specific recommendations would extend the principle of equal job opportunity to:

- Grant-in-aid programs with particular reference to those involving education, training, recruitment or referral.
- Programs where federal subsidies are involved as in housing.
- Agreements under which the federal government contributes monies to state and local programs.

In connection with the housing recommendation, the committee says "the relationship of housing to economic deprivation of some minority group members is an increasing problem. Frequently, distance from suburban plants to housing available to minority group members, particularly Negroes, causes commuting problems which, in effect, create an employment barrier."

The Kennedy Administration may face this problem in housing almost immediately. Robert C. Weaver, a Negro, has been nominated to head the Housing and Home Finance Agency, which handles, among other things, FHA mortgages. He advocates firm enforcement of nondiscrimination in housing subsidized by federal funds.

Switch from cost-plus to fixed-price could mean . . .

Base Price Goes Up $9.4 Million

Conversion of a Navy construction contract with a joint venture of Brown-Raymond-Walsh from a cost-plus-fixed fee to a fixed-price basis "may have added as much as $9.4 million" to costs for building military bases in Spain. So said the General Accounting Office in a report to Congress last week.

Companies in the joint venture are Brown & Root Inc., Houston, Raymond International Inc. and Walsh Construction, both of New York City. Raymond is the sponsor.

GAO says the contract change was made in June 1958 "without providing any material increase in the scope of the contractor's services," and recommends that the Navy negotiate with the joint venture for recovery of "excessive payments." At the time of contract-conversion, costs on the project for physical work completed amounted to $220.2 million.

GAO estimates that to finish the project under the original contract provisions—cost-plus—would have cost $57.7 million. Under the new fixed-price provision, GAO figures it will cost $67.1 million.

Navy argues past experience has shown that under a cost-plus basis, "direct costs and the percentage of overhead invariably increases to a marked extent and the completions of the contract work tends to drag out." GAO auditors "have not appropriately considered" the contractor's cost records, the Navy says.

A spokesman for Raymond told ENR, "We are not in agreement with the conclusions drawn in the GAO report."

Work on the bases was started in January 1954. It's estimated that by August, when physical work is completed, costs will be at $350 million. Although the physical operation is expected to be completed then, paper work, material disposal and clean-up will carry into 1962.

Researchers urged to seek . . .

Creative Solutions to Road Problems

Highway researchers must lift their sights and broaden their horizons to come up with creative solutions to the pressing problems that face the nation's transportation systems.

That was the principal message delivered to more than 2,000 scientists and engineers at the 40th annual meeting of the Highway Research Board in Washington, D. C., last week.

Pyke Johnson, the board's retiring chairman, called for a greatly expanded program of research in the social, economic and legal problems facing highway transportation: "Transportation service built upon the 10-mile daily travel of horse and buggy days cannot conceivably meet today's needs when time, rather than distance, has become the chief criterion of movement," he said.

Lawrence R. Hafstad, General Motors vice president in charge of laboratories, challenged the researchers to lift their sights from data to philosophy. He pleaded for an "over-all" approach to problems of mobility in the transportation field.

"Work on components, work on bits and pieces of the over-all problem, however diligent and dedicated, will be largely wasted if the bits and pieces fail to fit into a logical whole," he declared. "To formulate this logical whole we need to develop . . . a philosophy for transportation, with an agreed theoretical basis. This has been developed in recent decades for the communications industry; why should not something similar be done for the transportation industry?"

Mr. Hafstad also declared, ". . . a greater use of the over-all or systems approach to traffic and transportation problems is urgently needed."

Taking a look ahead at highway transportation, Mr. Hafstad made these points:

- No new power plant will replace the gasoline engine in conventional cars in the next 10 to 20 years. Best possibility probably is the fuel cell as a source of power for an all-electric car.
- Graded licenses for automobile drivers, similar to licenses granted airplane pilots, offer an interesting possibility for increasing highway safety.
- In cities, the best solution to congestion and traffic duty problems may lie in the physical separation of pedestrian and vehicular traffic.
- Various schemes for high-speed interurban transportation are technically feasible, but have not yet been tested from the standpoint of economics. (For one example, see p. 20.)

WILLIAM A. BUGGE, Washington Director of Highways is new HRB chairman.

More than 200 papers and reports were given during the week-long meeting; they covered the spectrum of highway research from management to maintenance.

Some researchers focused attention upon urban transportation problems. Nathan Cherniack, economist of the Port of New York Authority, presented a comprehensive statement of the "ubiquitous problem of adequate passenger transportation in urban areas." Among Mr. Cherniak's conclusions:

- No large urban area can depend solely or even largely on autos for weekday journey-to-work travel to its central business district. Some types of common carrier passenger transport are essential.
- Existing railroads and rail transit facilities should be used most effectively, even subsidized if necessary.
- Where there are no existing rail facilities, but where there are radial expressways into central business districts that will have to be expanded in the future, an entirely different type of solution is needed.

Robert F. Van Hoef, director of the planning division of the Michigan State Highway Department, emphasized that head-on conflicts between urban expressway projects and urban redevelopment programs can be avoided through proper coordination between state highway planners and local planners.

W. L. Haas, partner in Highway Management Associates, Madison, Wis., told one group that better long-range planning will assure public understanding and support of highway programs. Said Mr. Haas, "It is obvious that highway administration has lost contact with the public in recent years to the detriment of the highway enterprise. Closer cooperation with citizen groups is necessary to quell the mounting clamor caused by inadequate preparation."

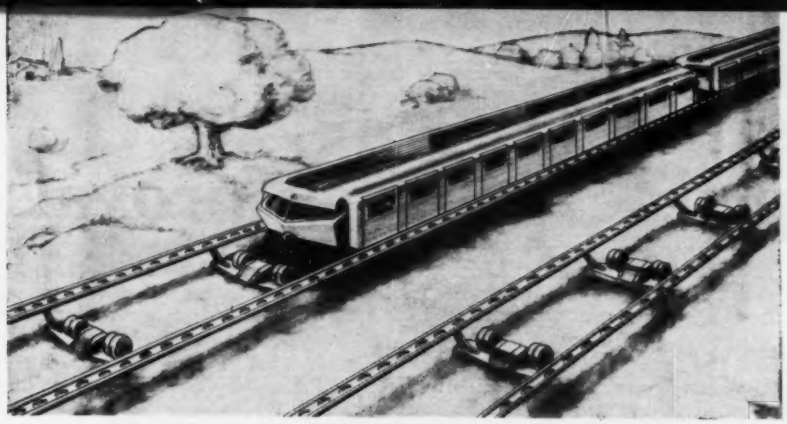
The mammoth Penn-Jersey Transportation Study is studying "all kinds of transportation routes and every known kind of vehicle, both public and private, together with persons and things moved," according to Henry Fagin, executive director. The three-year study covers a bi-state complex radiating outward from Camden, Philadelphia and Trenton.

A. S. Lang and D. H. Robbins of MIT's Department of Civil Engineering described the development of a new approach to the predicting of highway-user costs associated with different highway alignments. The method is built around a digital computer program that simulates the physical operation of a sample vehicle or vehicles. The technique is said to permit a far more detailed analysis of alternatives in highway design than previously.

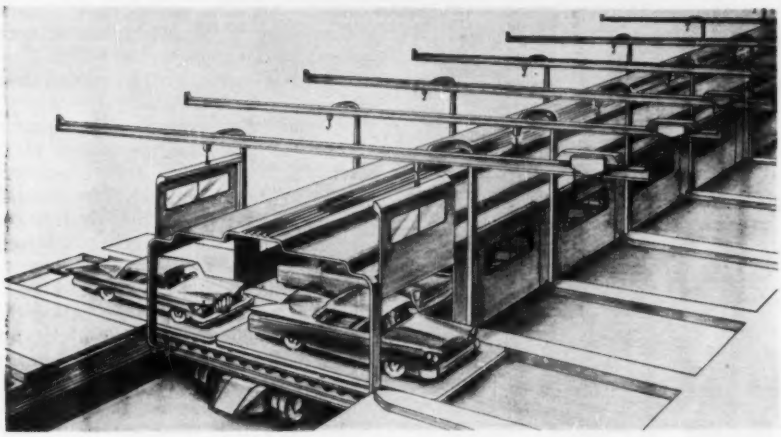
Monumental problems involved in providing needed services to motorists along thousands of miles of rural limited-access highways were outlined by C. W. Hartford and W. L. Hottenstein, members of the staff of the Ohio Turnpike Commission. The two men detailed service needs and demands on the 241-mile Ohio Turnpike. Roadside services—such as restaurants and service stations—are currently banned on newly constructed portions of the Interstate.

The Ohio Department of Highways has moved into high gear in its measurement of earthwork quantities on major highway projects by photogrammetric measurements, according to R. H. Sheik of the department's aerial survey and electronic computer section. Final payments to contractors are now based on this method. On 10 projects completed last year and involving more than 1 million cu yd of earthwork per project, the arithmetic mean difference between proposed earthwork quantities determined photogrammetrically and actual quantities removed was less than ¼th of 1%.

William A. Bugge, Director of Highways for the State of Washington, was installed as 1961 chairman of the board. Mr. Bugge also received the George Bartlett Award, one of the country's top honors in the highway field. Robert R. Liteheiser, engineer of tests for the Ohio Department of Highways, and Harold Allen, chief of the division of physical research of the Bureau of Public Roads, received the Roy W. Crum Award for distinguished service in highway research.



For the Man Who Hates to Drive...



...Moving Highway Does It for Him

A motorist could travel from Chicago to New York in five and one-half hours without ever touching his steering wheel or gas pedal by using a system proposed at the Highway Research Board meeting (see opposite page).

Westinghouse Electric Corp. engineers offer their Roller Road as the solution to the country's transportation problems.

Under the Roller Road system, automobiles would be transported from city to city at 150 mph in flat-bottom carriers, 10 cars to a carrier, with three to ten carriers linked in a train.

Instead of having wheels and traveling under its own power, a string of carriers would be supported and propelled by a series of electrically powered rubber rollers installed at 20-ft intervals along the Roller Road. The system would resemble the skate-wheel conveyors that supermarkets use to move food cartons from truck to storeroom.

"The new concept was prompted primarily by the realization that conventional methods of intercity, or turnpike travel will be inadequate when our present total of 61 million automobiles exceeds the expected 100-million mark in the 1970s," says Charles Kerr, Jr., one of the engineers who took part in the development of the Roller Road.

Mr. Kerr says the system would be invulnerable to delays from fog, ice, sleet or snow.

Each lane of this automatic highway is made up of powered rubber rollers. The drive package for each roller would be a motor, a torque converter, a brake and a reduction gear.

Guide rails steer the carriers along the rollers. Guide wheels at the bottom edges of the carriers operate against the rails.

The rollers are powered only when a carrier is traveling on them. A train of 10 carriers would be 1,100 ft long. Traveling at 150 mph it would pass over a single roller in five seconds. This enables the motors to be heavily overloaded for brief periods.

The carrier trains would stop at fixed stations where automobiles would be loaded and unloaded automatically. The only factor limiting the number of carriers in a train would be the length of the loading platforms.

Each 110-ft carrier would have space for 10 automobiles and would include a lounge and rest rooms. Designers of the system say it could be used to carry commuters between cities and suburbs at 75 mph.

Repairs Too Late

Hurricane-weakened tower destroyed by wind, seas

A half-million-dollar contract for repairs to Texas Tower No. 4—a radar island in the Atlantic, 80 miles southeast of New York City—came too late to save the tower from being destroyed by wind and high seas early this week.

The tower was badly damaged last September by Hurricane Donna. And in October a contract for repairs to tower legs, crossbracing and decks was awarded to a combine of J. Rich Steers and Morrison-Knudsen.

But as late as January 6, a survey made by the contractor showed the legs of the tower to be structurally deficient.

The tower, which was erected by the Steers-Knudsen combine in 1957 at a cost of $20 million, was designed by Moran, Proctor, Mueser-Rutledge of New York to withstand lateral forces exerted by the simultaneous action of 35-ft waves and 125-mph winds. In spite of this, both Donna and the more recent storm proved too much for the structure.

An appeal for help was heard early Sunday afternoon in a report that said the tower was swaying violently. At 7:33 p.m. a Navy ship six miles distant lost both radio and radar contact with the tower, and it is believed that the tower collapsed at that time.

Air Force officials were unable the next day to explain what had happened to the tower or to say why the deck, which was floated into place during initial construction, should have sunk, even if the legs buckled.

Despite its numerical designation, Tower No. 4 is actually the third and last offshore radar station erected under a 1954 plan for five such towers. It was also erected in the deepest water—185 ft. Its legs, heavily cross-braced, were 288 ft long and 12 ft 6 in. in diameter. Tower No. 2, set on George Bank, 160 miles east of Cape Cod, is in 56 ft of water and is supported by 10-ft-dia legs, which are unbraced. Tower No. 3 is on Nantucket Shoals, 80 miles southeast of Nantucket Island. It is supported in 80 ft of water by 14-ft 6-in.-dia legs, also unbraced. Tower No. 2, first of the units to be erected, was badly damaged by storms during its construction in 1955, but neither of the first two units has been badly hit since.

The demolished tower and its two counterparts were quite similar in design, except for the differences in leg bracing made necessary by the deeper water at the site of unit No. 4. However, there is one important difference in the sites. Tower No. 4 was founded in sand; the other two towers are seated on rock.

New York investigators charge . . .

Bribery Expedites Plan Approval

Charges of graft "at every stage along the way" in the Plan Examining Division of the New York City Buildings Department were made in a 42-page report by the State Commission of Investigation. The charges followed a 10-month inquiry.

The report claims that payola in the Plan Examining Division has become an established system: Architects, engineers and builders must either pay off each stage of plan-processing or risk delays and harassment. Illustrating what happens to architects who refuse to pay, the report cites the experience of a Manhattan architectural firm whose plans were "lost" on several occasions.

After this indication that crime does pay, the architects again retained the services of an "expediter."

The investigators explain the practice of "expediting," in which middlemen are retained by architects to see their plans through the Plan Examining Division. They tell of one architect whose knowledge of the system led him gradually to abandon his architectural practice and become a full-time expediter.

The report attributes the Plan Examining Division corruption to "inadequate personnel, cumbersome procedures, an obsolete building code, and inadequate policing." It recommends reforms in these areas.

During its investigation the commission's staff examined the records of 37 architects, engineers and expediters. Many architects approached by the staff refused to cooperate in the investigation.

"In many cases, these architects turned out to be either too busy to discuss the matter or more worried about possible reprisals from within the Department than they were about the continuation of corrupt practices in the Department," reported the four commissioners signing the report. "The failure of earlier investigations to produce long-term reforms has also developed a cynical attitude among the decent elements in the building trades. . ."

Buildings Commissioner Peter J. Reidy protested that the report was unfair in implying over-all corruption in his department. He also claimed that the report failed to acknowledge the steps his department was taking to remedy the shortcomings for which it was criticized. As an example he cited the investigators' failure to mention a Building Congress committee that has been working on a revised building code since last March.

Commissioner Reidy also stated: "In order to dispel any thought of corrupt activity . . . all our official forms give notice that bribery is a crime and the giver and the taker are equally culpable and can go to prison."

Another measure designed to prevent payola in the Plan Examining Division is an order that no plans are to be removed from their regular order without the commissioner's written approval.

The Buildings Department has pursued vigorous policies of improving personnel and eliminating graft, according to Mr. Reidy. He pointed out that his department has held more disciplinary trials during his two years in office than at any other time in the city's history.

The widespread failure of citizens to report evidence of corruption is a grave handicap to reform, said Mr. Reidy.

Interior Gets a Water Man

James K. (for Kennedy) Carr, a big man in the water field in California, steps into a broader arena this week. He becomes Undersecretary of the Interior. The appointment is seen as reassurance for those Californians who had qualms about the appointment of Stewart Udall, an Arizonian, as Interior Secretary (ENR Dec. 15, 1960, p. 24).

James K. Carr

Mr. Carr leaves the chairmanship of the California Water Commission, an advisory agency on water development policy, and a full-time job as assistant general manager of the Sacramento Municipal Utility District, a publicly owned power agency serving 500,000 persons in a 650-sq-mile area.

No stranger to the Interior Department, the 47-year-old graduate civil engineer worked as a rodman with a Geological Survey team the summer before he graduated from the University of Santa Clara.

After graduation he became a construction engineer on Shasta Dam, not far from Redding, Calif., his birthplace. From 1940 to 1945, Mr. Carr was engineer and assistant to the Bureau of Reclamation Regional Director on project planning, water rights, and power problems in Sacramento Region 11.

Next year, he became district manager for the Bureau of Reclamation in Chico. His responsibilities included operation of Shasta and studies on the Trinity River and the Sacramento Valley canals until 1951 when he was made engineer-consultant to the House Interior and Insular Affairs Committee, headed then by Clare Engle, now a U. S. Senator from California.

James Carr is a registered professional engineer in his home state and the District of Columbia. He has four daughters ranging in age from 15 to 20 years. A fellow of the ASCE, the Undersecretary is also a member of the Board of Regents of his alma mater, Santa Clara University.

Considered a strong supporter of public power, Mr. Carr's duties at Sacramento MUD included responsibility for planning the construction of SMUD's Upper American River Project—due to deliver first power this spring.

Of his new boss, Mr. Carr says, "Secretary Udall, like President-elect Kennedy, has a reputation as a man who gets things done. I am looking forward to working closely with Mr. Udall in an aggressive and affirmative program for the conservation and prudent use of the nation's resources."

Mr. Carr's appointment by the President-elect was made simultaneously with those of John A. Carver, Jr., Assistant Secretary for Land Resources; Kenneth Holum, Assistant Secretary for Water and Power; Frank Barry, solicitor; and Floyd E. Dominy, held over as Commissioner of Reclamation.

SPEEDY DELIVERY FROM STOCK...

In the market for carriage bolts? We make a full line of sizes. Lag and machine bolts also. And they're all top quality.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

For strength
... economy
... eye-appeal

Steel

BETHLEHEM STEEL

Thomas E. Connolly

David E. Root

Beavers Gather to Fete Four

The Beavers, an organization of West Coast heavy construction men, assembles this week to honor four of its members with Golden Beaver awards.

Thomas E. Connolly, semi-retired head of two construction companies, receives the award for management. He founded T. E. Connolly, Inc. in San Francisco 35 years ago and developed into a major western road, dam and tunnel builder. World War II brought on overseas construction ventures and Connolly Pacific Co.

The award for supervision goes to David E. Root, retired vice president of Guy F. Atkinson Co. His 60-year career includes supervision of such important projects as the Hanson and Mud Mountain dams and excavation for Bonneville Dam.

Other Golden Beaver trophies go to George T. McCoy, for his engineering achievement while chief of California's Department of Highways; and John L. Savage, retired consulting engineer and international expert on dambuilding.

Mass Transportation Bill Back in Congress Again

Congress last week got the first draft of mass transportation legislation on which it is expected to act at this session. With thirteen co-sponsors from both parties, Sen. Harrison A. Williams Jr. (D., N. J.) offered an expanded version of his 1960 bill, which passed the Senate but failed to clear the House Banking Committee.

Like its predecessor, the new bill would authorize grants for mass transportation planning and loans for construction or improvement of mass transport facilities, but on a larger scale than last year. A fund of $75 million for 50-50 grants to assist planning and a limited number of pilot demonstration projects for research purposes would supplement the urban planning program of the housing and Home Finance Agency. HHFA would administer the proposed new transportation program.

Low-cost, long-term loans would be available to pay for facilities and equipment to improve or preserve transportation services—such items as terminals, stations, parking lots, commuter rail cars and buses. The loan fund would be limited to $100 million the first year but $150 million could be added to the loan fund in each succeeding year.

Although the Williams bill is not an Administration measure, it does fit the prescription called for in the Democratic platform and in two Kennedy task force reports to aid urban transportation.

Around the Country . . .

• **New broom for old bailiwick**—Gov. John A. Volpe, new governor of Massachusetts and a former commissioner of the state's Department of Public Works, has recommended a sweeping reorganization of the department. It has been under fire during recent months for laxity and alleged dishonesty in some contract award and purchasing practices.

• **Ike gets Hoover Medal**—For the second time the Hoover Medal has gone to a U. S. President in office. The first time, the medal went to its namesake, Herbert Hoover, this time to President Eisenhower. The medal is presented jointly by the major engineering societies.

• **Peripatetic plastics**—A traveling exhibit of plastics used in buildings will start its tour with a show in Springfield, Mass., on April 15. The exhibit will visit 16 cities.

• **Court says 'go'**—A court decision has cleared the way for a start early next month on the $27-million Hilton hotel in downtown San Francisco. City building and fire departments had refused to clear the unusual plan, which calls for a seven-story interior auto ramp to parking stalls next to the rooms. They cited a lack of fire exits.

• **Hole for the bomb**—The Atomic Energy Commission opens bids February 7 for drilling six new wells and reworking an old one in the Tatum Salt Dome area near Hattiesburg, Miss. The object is to obtain groundwater information. The AEC is considering the Tatum Dome for underground nuclear detonations.

• **First step**—Construction will start next month on a $14-million federal building in Memphis. It's the first structure of a 20-block civic center.

• **A dike named Hoover**—America's former engineer-President last week supplied the name for another engineering project. An 84-mile, 31-year-old embankment around Florida's Lake Okeechobee was officially christened Herbert Hoover Dike.

• **Modern housing**—Catranel, Inc., named last month as developers of Pittsburgh's pioneering East Hills housing development (ENR Feb. 4, 1960, p. 28) will begin first-stage construction on the 1,400-unit project in the spring.

• **San Francisco power plant**—An $80-million expansion of Pacific Gas & Electric's Morro Bay power plant will start this month. Two units of 330,000-kw generating capacity will be added to the plant's present 330,000 kw. The first-phase contract went to Johnson, Drake & Piper, Inc., Oakland, Calif.

NEW YUBA SOUTHWEST

11-WHEELED POWER ROLLER

PR-II

DESIGNED WITH 100 PSI TIRES

Specified densities on the new projects are easily met with this new PR-11 Power Roller. Engineered and designed with 100 PSI tires, this **18-ton** self-propelled roller is the first of a new series. Increased density specifications require unit ground pressures of 70 to 100 PSI under the roller tires. These higher unit pressures (exceeding truck tire contact pressures) densify surfaces beyond traffic stress resulting in a stable roadway.

The Yuba-Southwest PR-11 Roller gives economical and dependable performance in rolling asphaltic concrete paving, black-top bituminous paving, and soil cement paving. Also in compacting sub-base and base courses, small earth-fills, and road shoulders.

Maximum ease of performance in both shuttle and one-way service is obtained through the torque converter and the hydro-shuttle transmission. Maintenance is kept to a minimum and is never a problem, as only five lubrication points are needed to service the entire unit. This new Yuba-Southwest unit can be an important member of your equipment team.

Yuba-Southwest also manufactures

Semi-Trailer Sprinkler Tanks
Multiple-box Rollers
Sheepsfoot Rollers

...at your Caterpillar Dealer

YUBA

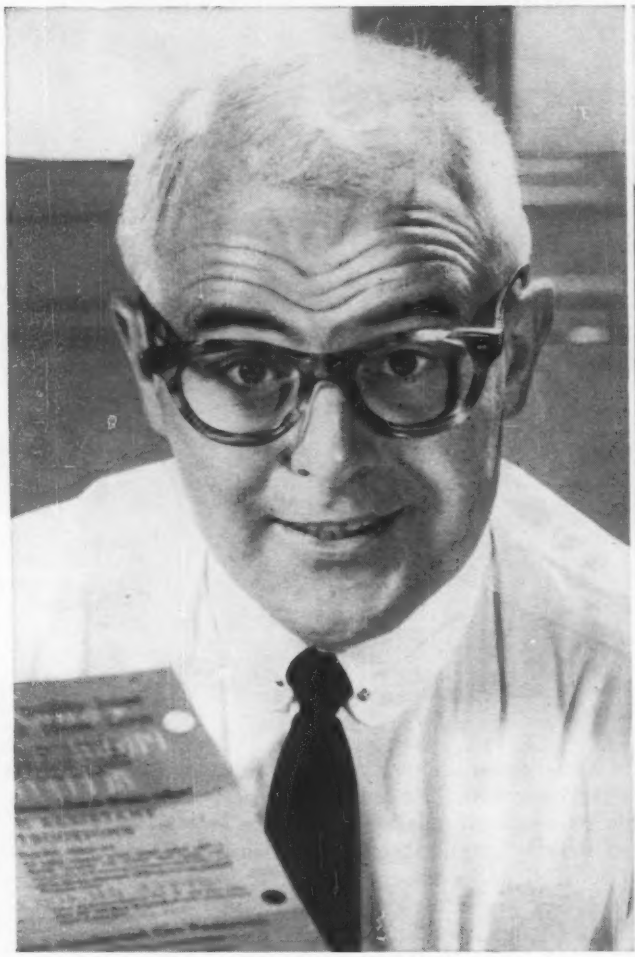
specialists in compaction equipment

SOUTHWEST WELDING & MANUFACTURING DIVISION

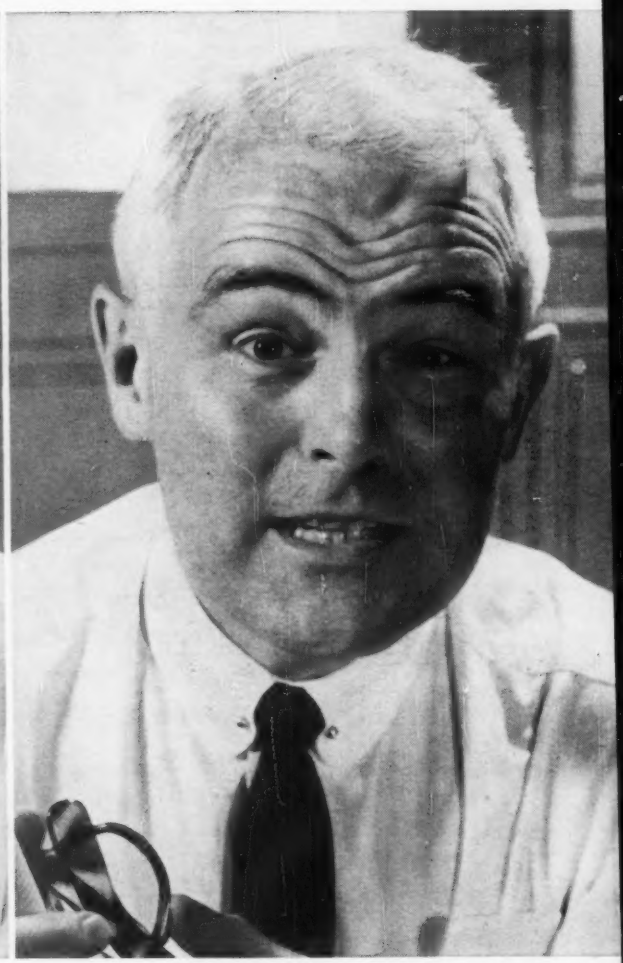
YUBA CONSOLIDATED INDUSTRIES, INC.

GOODYEAR

Hose? Goodyear



THE KIND I NEED?
(No matter how tough or unusual your application or what type hose it calls for—*Goodyear has the answer!)*

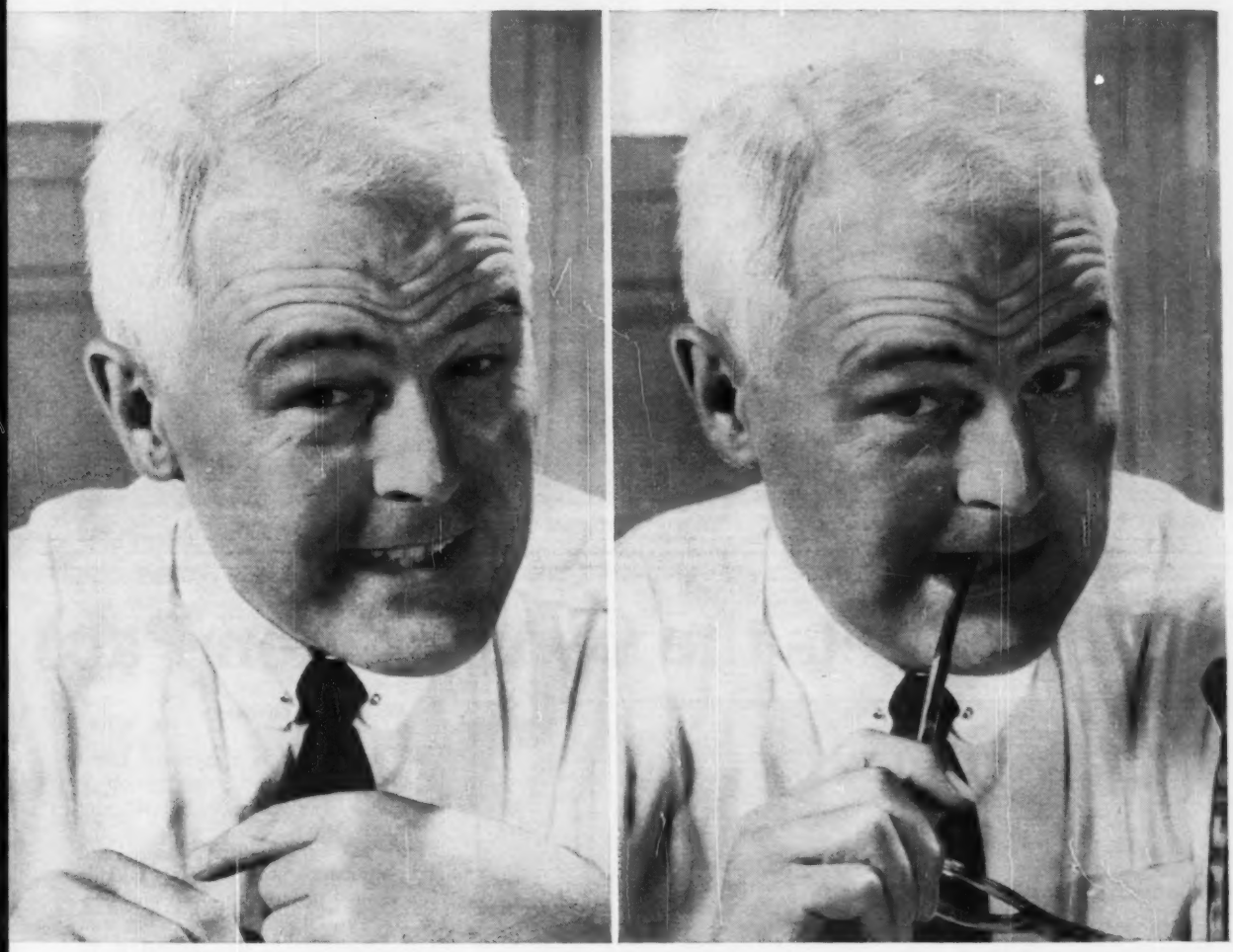


WHEN I NEED IT?
(When you need hose in a hurry—locally available right from distributor stocks—*Goodyear has the answer!)*

FOR THE RIGHT HOSE... AT THE RIGHT PLACE...
CALL YOUR GOODYEAR DISTRIBUTOR... first in

Lots of good things come from GOOD

Has All the Right Answers!



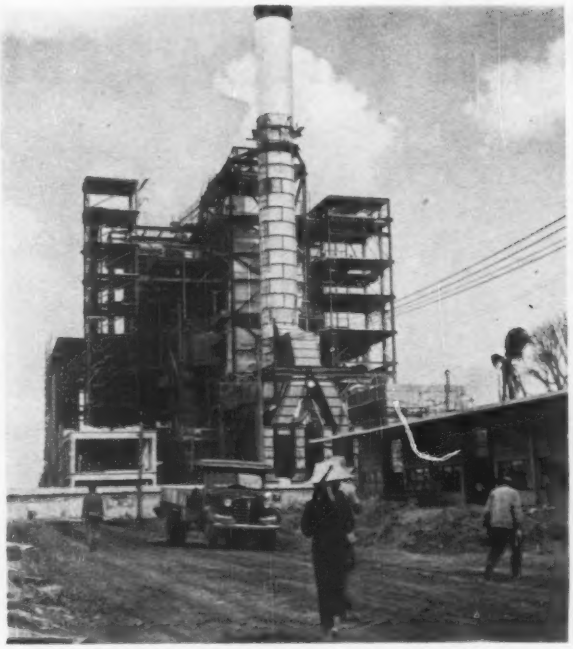
TOUGH AS I NEED IT?
(For the extra ruggedness, extra dependability and extra safety of real quality hose—*Goodyear has the answer!)*

SPECIAL HELP WHEN I NEED IT?
(Call for the advice of an expert like the G.T.M. – Goodyear Technical Man – and *Goodyear has the answer!)*

AT THE RIGHT TIME... AT THE RIGHT PRICE...
service with all industrial rubber products

Or write Goodyear, Industrial Products Division, Akron 16, Ohio

GOODYEAR INDUSTRIAL PRODUCTS



POWER FOR BANGKOK will come from this 75,000-kw steam plant until Yanhee Dam is completed in 1963.

LOCK IN CHAINAT DAM on the Chao Phya River can handle 30 sampans with their towing launches.

Thailand Sets the Construction Pace

THAILAND'S CONSTRUCTION MAP: power dam on the Ping River; irrigation diversion dam on the Chao Phya River; a cement plant; two new sections of modern highway; 141 new highway bridges; steam power plant, streets and buildings for Bangkok.

By Waldo G. Bowman

Political unrest is a constant threat to the progress that construction is beginning to bring to the countries of Southeast Asia.

Fed by Communist pressure and blandishments, accented by guerilla raids against pro-western areas and people, the unrest is erupting more and more frequently in government crises and coups. And coups hamper construction whether they fail or whether, as has sometimes been the case, they result in the establishment of a better government than existed previously.

In any event, here is a region, hanging like a pendulum from the underbelly of Communist China, where the Kennedy Administration can quick-test any new theories in foreign policy it may devise to implement its campaign promise to improve the U.S. position and prestige abroad. Among the nations of Southeast Asia where U.S. aid has been substantial, only in Thailand is development via construction going ahead in any volume and relatively unaffected by a plethora of political activity.

One reason for this, of course, is Thailand's geographical position in the

*This is article IV in a series of reports by **ENR Editor Waldo G. Bowman** on construction activity in Asia.*

MODERN HIGHWAYS are coming slowly. The 75-mile East-West Highway curves through mountainous jungle.

NEW CONCRETE BRIDGES for existing roads have replaced 141 rickety wooden structures.

for Southeast Asia

very center of the Southeast Asian peninsula, where it is sheltered from direct contact with Communist China and Communist-controlled North Viet Nam. But a more potent reason is a strong government, which, although established as a result of a military coup two years ago, is not only sensitive to the country's needs, but has seemingly enlisted popular support for its actions.

This support may come more easily in Thailand than in the neighboring countries because of the pride the Thais take in their long history of self-government. A kingdom, Thailand has a rallying point and a stabilizing influence in its king, an absolute monarch up to 1932 and now functioning under a constitutional form of government. In contrast, South Viet Nam, Laos and Cambodia were formerly parts of the French colony of Indo China, and are finding their new independence full of thorns and surprises.

Cambodia, after vacillating under Communist pressure, declared itself neutralist. Laos is undergoing a Communist-supported revolution which, even if unsuccessful, will leave the government poorly prepared to resume development projects. South Viet Nam suffered a short-lived coup in November, which the government quelled, but without quieting popular (and largely non-communist) dissatisfaction with the way the government is being run.

There are two other aspects of the current situation that give some support to the view that Thailand is, at least for the moment, in a class by itself in Southeast Asia. In the first place it is the only country in the region to which the World Bank has made loans, a compliment to the government's stability and to its willingness to finance its own development. The second of these aspects is that the four countries of the region with interests in the great undeveloped Mekong River—Cambodia, Laos, South Viet Nam and Thailand—chose Thailand's capital, Bangkok, as the operating headquarters for the coordinating committee they organized under United Nations auspices to oversee development investigations for the river's Lower Basin. Among the countries themselves there would thus seem to be some recognition of Thailand's special position.

All this does not mean that important developments involving construction have not taken place in all the countries of Southeast Asia. Actually remarkable progress has been made since each of them was devastated by the Japanese armies and Allied bombers. It could hardly be otherwise considering that U.S. aid to Cambodia, Laos and South Viet Nam has approached $300 million each, while Thailand has received about $200 million exclusive of about $100 million borrowed from the World Bank. And there are probably a good many other millions of military aid, particularly to South Viet Nam, that are not included in these figures.

Cambodia, for example, has built a new 70-mile road from its capital, Phnom Penh, to a new deepwater port it is developing on the Gulf of Siam. It also has a number of irrigation projects under way. One of them is of particular interest because it involves one of the ancient reservoirs and some of the canals that served the Khmer civilization of the 6th to the 13th centuries. That civilization built Angkor Wat and the other temples that justifiably attract tourist attention as one of the wonders of the world.

The scheme, to which the U.S. Operations Mission in Cambodia has contributed about $2 million, including $1 million worth of construction equipment, is to restore the dikes around a 1x5-mile reservoir to their original 30-ft height, build a diversion structure in the nearby river and utilize a part of a 900-year-old moat around one of the temples as a diversion canal. Water from the reservoir will flow into a new system of irrigation canals.

In Laos practically everything—schools, highways, public buildings, and water supply—has been created by U.S. aid in the past five years. The country is two-thirds jungle, and it had very little in the way of modern facilities to begin with. A 63-mile highway planned by the U.S. Bureau of Public Roads engineers to connect the capital and largest city, Ventiane (population 60,-

000) with the road system in South Viet Nam was about ready to go out for bids to U. S. firms before the revolution. It is now indefinitely delayed.

• **Progress under difficulties**—Of the four countries of Southeast Asia, South Viet Nam is the only one closely rivaling Thailand in new development, but its governmental problems are far more serious—partly because it is exposed to Communist infiltration from North Viet Nam and partly because its president, Ngo Dinh Diem, has many critics who charge him with dictatorial methods. Nevertheless, Ngo has succeeded in resettling a million refugees from North Viet Nam, many in small new agricultural villages. And his government has built roads, planned a new water supply for Saigon, the principal city, and has concluded arrangements with the Japanese to build—and pay for as war reparations—a major hydro electric project, the first in the country.

South Viet Nam's road construction has been handled by Johnson, Drake & Piper, with Capital Engineering Co. of Washington, D. C. on the bridges. The U. S. Bureau of Public Roads aided in the road design. Included in the program is a 20-mile divided lane boulevard extending north from Saigon, and a considerable mileage of "country" roads of about tertiary character running east-west. The principal difficulty has been on two of the river bridges, whose main pier foundations have had to go down over 200 ft. More bridge work is coming up for bids soon, since a number of structures on the country's only north-south road, along the coast, require replacement. A long runway for jets at the Saigon airport is also about ready for bids.

The interesting feature of the hydro project, to be located about 150 miles north of Saigon, is that, with a 125-ft-high earthdam, a head of 2,600 ft can be developed. The reason for this is that the dam site is behind a range of mountains that rise up directly from the coast. The water will drop through these mountains via a three-mile tunnel to the power plant, which will be at sea level. The dam, which will be about a mile long, will impound a 120,000-ac-ft reservoir. The initial power installation will be 160,000 kw. Known as the Da Nhim project, it will cost about $50 million, of which Japanese war reparations will supply $37 million. The designer is Nippon Koei Co., Ltd., of Tokyo.

Saigon's water supply has presented a problem on which several U. S. firms have been engaged. Hydrotechnic Corp. concluded that an impounded river supply should be developed, but Lane International Corp., with long experience on wells in the country, recommended a groundwater development as being just as satisfactory and cheaper. The Development Loan Fund, which had agreed to loan $25 million for the work, asked for an independent review of these two recommendations. Hazen & Sawyer of New York was engaged for this review and concluded that either type of supply would be satisfactory for the present. However, it is understood that it finally recommended the river supply in the belief that the demand for water would grow so rapidly, when water was available, that only with an impounded supply could the necessary expansion be assured.

AGILE Thai worker, having checked pile cap, swings down to attach hammer to line on the Nan River bridge job at Pitsanulok.

• **Thailand leads**—But if these countries can show progress, Thailand can show more of it and in larger projects. A list of the most important ones would include 200 miles of modern highways in two projects, a lot of it through mountainous jungle; a 560,000 kw hydro project requiring a concrete arch gravity dam 508 ft high; a 75,000 kw steam power plant in Bangkok; a six-lane divided boulevard in Bangkok, seven miles long, on a roadbed made by filling old canals along either side of an existing street; a gated diversion dam 35 ft high and 1,200 ft long across the Chao Phya River, which feeds three 7,000 cfs irrigation canals; a replacement of 141 bridges on two highways with modern reinforced concrete structures, having a total length of about 10,200 ft; a new electrical distribution system for Bangkok; and a 250-mile transmission line from the hydro project to Bangkok.

As far as foreign aid is concerned, the highway projects are financed by ICA funds, administered by the U. S. Operations Mission (USOM) while funds for the power and irrigation facilities come from loans from the World Bank. Thailand's highway department handles the road program, while the power and irrigation facilities are under its irrigation department. Actually, the World Bank loans are made to a special agency, the Yanhee Electricity Authority, but the head of YEA, Mom Luang Xujati Kambhu, is also the director general of the Royal Irrigation Department.

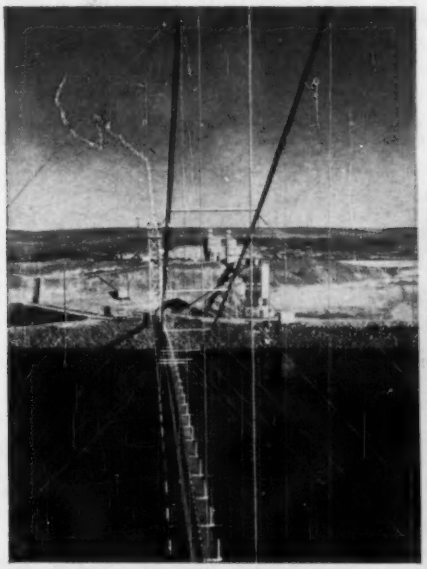
U. S. consulting engineers and contractors have a prominent part in all of this work, not only in designing and supervising construction, but in training Thai personnel in these operations. Sverdrup & Parcel, St. Louis, is consultant to the Thai Highway Department on the two mountain highway projects and on the bridge replacement program; this same firm is also consultant to the Yanhee Electricity Authority on the hydro project, and has engaged Engineering Consultants, Inc., of Denver to design the dam. Raymond International has been the contractor on the mountain highways, while Brown & Root-Utah is the contractor on the hydro project. There is also an international consulting board on the hydro project consisting of R. E. Davis, C. E. Blee and E. B. Burwell of the U.S., Henri Gicot of Switzerland and F. Vogt of Norway.

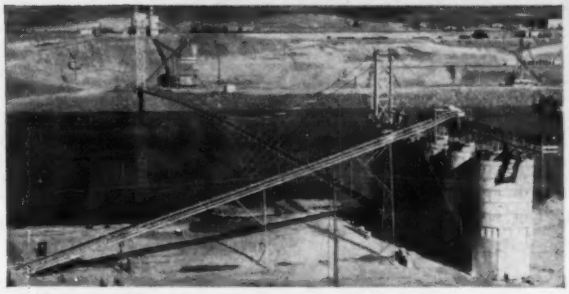
Kuljian Corp., Philadelphia, is consultant on the Bangkok steam plant and, since Westinghouse electrical equipment is used, engineers from this company are also on the job. Rogers Engineering Co. of San Francisco is general consultant on the electrical distribution system in Bangkok while construction management is being handled by J. G. White Engineering Co., New York. A high tension tie line around the city and the long transmission line from the dam are in charge of Sverdrup & Parcel. Two other consulting firms are working on assignments from the highway department—Transportation Associates, Washington, D. C., on a 65-mile section of highway from Bangkok to Saraburi, and Charles M. Upham Associates on developing road construction methods suitable to conditions that exist in Thailand.

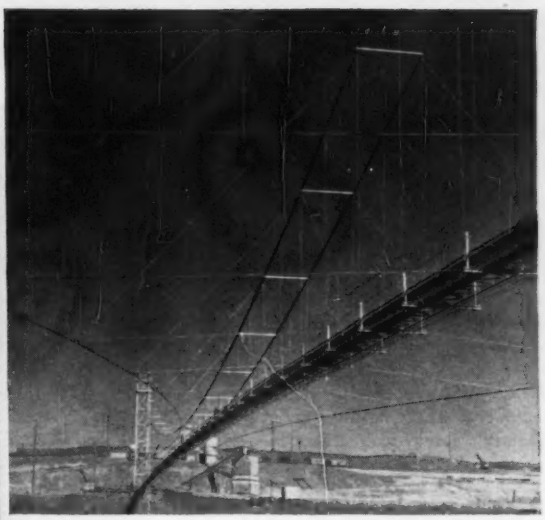
Among all these activities, each interesting and significant in one way or another, the highways and the work of the Yanhee Electricity Authority are particularly notable.

• **First modern highways**—Back in 1955 the highway department, aided by USOM, developed a plan that in-

HOW TO SAVE TIME, MONEY AND MILES WHEN YOU BUILD A DAM







use a Roebling Conveyor Suspension Bridge

The sole purpose of this 1000-foot span, Roebling designed suspension system is to support an aggregate-carrying conveyor. The site is the Ice Harbor Lock and Dam Project at Pasco, Washington, under construction by Guy F. Atkinson Company.

The problem, and it was a large one, was to get the concrete aggregate from the South side of the river to the North side, without having to truck it some 10 miles around. The tremendous amount of concrete needed for the pouring of the dam's locks fully justified the erection of this structure. The savings in time and labor, and the assurance of an uninterrupted flow of material are additional factors that add to its value.

Of course, you don't have to build a dam before a Roebling conveyor *suspension* system can be of value to you. Your needs may be considerably more modest. You may have an in-plant (or "in-and out-plant") materials handling problem. It may be temporary or permanent.

No matter. Roebling designed and constructed suspension systems of all kinds are easing transportation problems for manufacturers and processors with speed, safety and savings. Don't think for a minute that your problem must be of the above magnitude. On the other hand, your needs may be greater. Either way—to carry your conveyor across the yard, or river, or between mountains—a Roebling suspension system can be the most economical answer. For details about your requirements, just ask Roebling's Bridge Division, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

cluded eight primary roads reaching all parts of the country. Priority in construction was given to roads that would serve the northeast region of the country, which had always been isolated from Bangkok. Other regions of the country were connected to the capital city by waterways, but the northeast region's streams flowed in the opposite direction into the Mekong River.

The first job undertaken was, therefore, a "Northeast Highway" to run from Bangkok to Sariburi to Khorat, the principal city of this northeast region, and thence on up to the Laos border. The 125-mile Sariburi-Khorat section was considered the most important since it penetrated the mountain range that had isolated the northeast region. The work was assigned to Sverdrup & Parcel for engineering and Raymond International for construction. Raymond and the consulting engineers designated the equipment that would be required and the government purchased it, some $2 million worth from U. S. manufacturers. The road, 40 ft wide, including a 25-ft asphaltic concrete roadway and 8-ft penetration asphalt shoulders, was designed for 8,000-lb wheel loads and equipped with H-20 bridges. It cost $15.6 million and was dedicated in 1958, in time to transfer the equipment to the next priority job—a 75-mile section of an East-West highway across the north part of the country. This East-West highway link joining the towns of Pitsanulok and Lom Sok was completed in December.

No one could see this highway without being impressed with its fine quality and the difficulty of its location and construction. For about 25 miles it traverses rice paddy country, then it starts to rise into what was virgin mountainous jungle where only elephant paths existed previously. The rise to the summit is over 2,200 ft before it starts down into the valley where Lom Sok is located.

Fills 120 ft high and cuts almost as deep are required. Total excavation on the job exceeded 6½ million cu yd. The asphaltic roadway surface, on modern subgrade and subbase construction, is 20 ft wide, and the 8-ft-wide shoulders are also paved so that ox carts can use them instead of congesting the roadway and chipping off the edge of the pavement. Bridges are of reinforced concrete girder type, 26 ft wide and designed for H20-S16 loading. Grades are mostly 6% maximum although several are as much as 9% where the cost of flatter slopes would have been unreasonable.

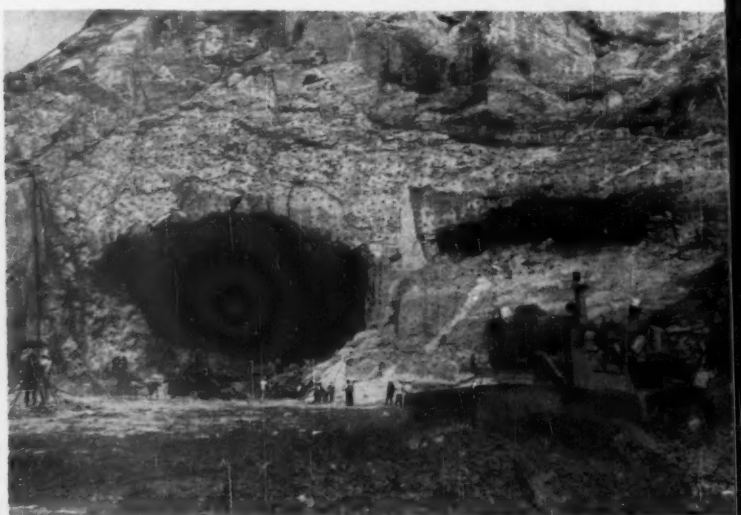
An idea of some of the difficulty of the work is gained from a statement in the official progress report for October: "Construction was curtailed during the month due to heavy rains. Rainfall in October measured 14.18 inches."

But despite rains from May to October, jungle and rough terrain, the East-West Highway section is finished, except for an added project at its west end—a new bridge over the Nan River at Pitsanulok, on which foundation

. . . Thailand's Yanhee Dam is the

UPSTREAM COFFERDAM is in place. One 45-ft-dia diversion tunnel is in service while other is still used as an access road.

RIVER ENTERS diversion tunnel (lower left) while upstream cofferdam is built to final height (right).



SPILLWAY PORTALS are extensively rock bolted to protect the excavation of the steeply inclined tunnels.

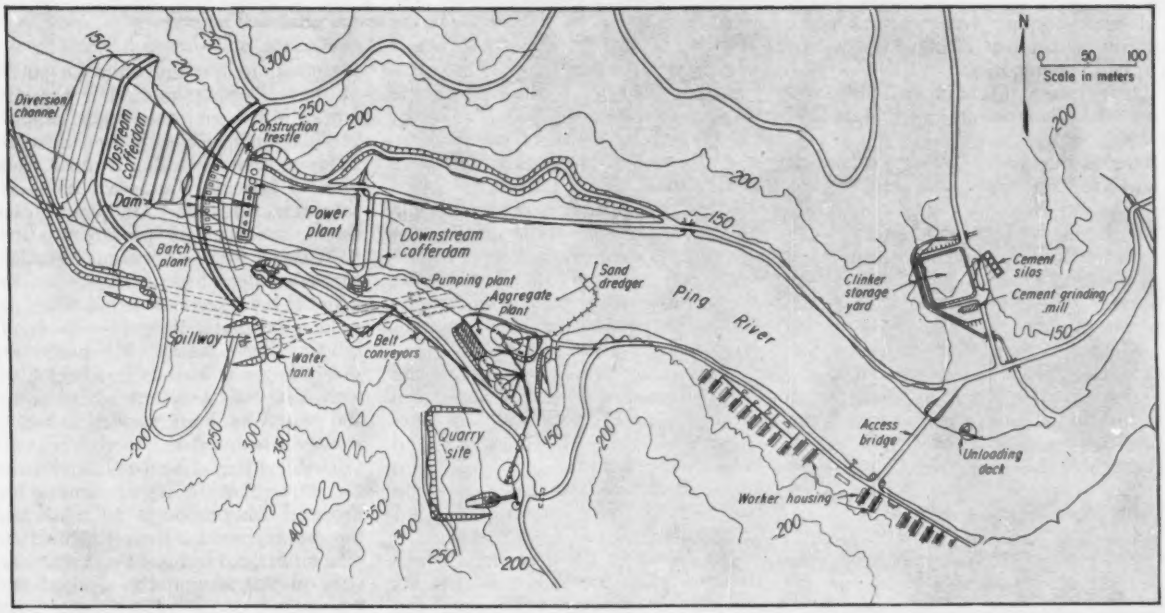
work has just begun. This town will thus continue to be the scene of construction activity, which has not let up since the highway work was started. In the first place the town was almost completely destroyed by fire the day before the first highway engineer party arrived. It was rebuilt with wide new streets, financed by USOM, and with new commercial buildings and homes, financed locally. Later it was the location of a precasting plant where all of the girders and handrails for the bridges on the first 25 miles of road were manufactured.

Raymond transferred most of the equipment it had used on the previous Northeast highway job to this East-West highway project and continued to train Thai operators. At the end of October the company had 106 Americans and 2,110 Thais on the job. Sverdrup & Parcel engineers also used Thai engineers on both location and inspection work. At the end of October its force consisted of 22 Americans and 85 Thais. A good nucleus of trained local personnel is thus being made available for the large highway program that is still to be carried out.

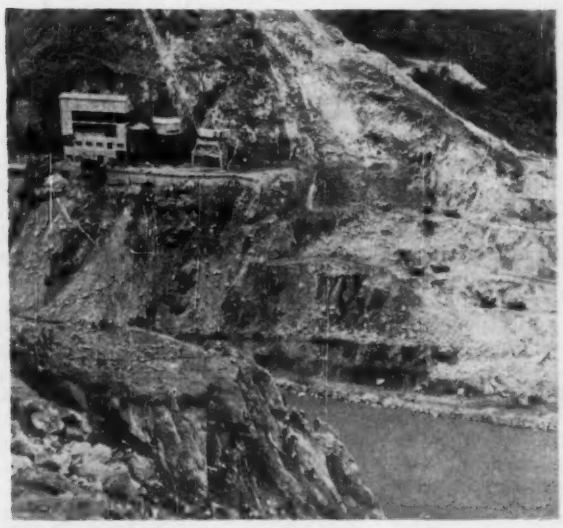
• **Big dam with big purpose**—Thailand's biggest project—and by far the largest in Southeast Asia—is the $100-million dam and power plant on the Ping River, 250 miles north of Bangkok and close to the Burmese border. Although it is officially named Bhumiphol Dam in honor of the king, it is more often called Yanhee Dam. Yanhee is the name of the mountain that forms one of the abutments; also, the agency formed to receive the $66-million loan for the dam from the World Bank is the Yanhee Electricity Authority (YEA).

(Story continued p. 36)

biggest project in Southeast Asia



CONSTRUCTION PLANT is ready to go into action. Unusual features: cement grinding mill and the close proximity of quarry, aggregate preparation plant and dredged sand supply.



RIGHT ABUTMENT excavation and assembly of refrigeration building and mixing plant proceed side by side.

DENTAL WORK on the right abutment, aided by water jets, takes excavation down to solid rock.

The dam will be a 508-ft concrete arch-gravity structure of 1,300,000 cu yd forming a reservoir with 7 million ac ft of useable storage. It will feed a power plant at the base of the dam built for eight 70,000-kw generators of which two will be installed initially. They will be connected to 100,000 hp Francis turbines operating under a rated head of 330 ft.

The dam will also exercise a considerable flood control effect on the Ping and the Chao Phya rivers, improve the extensive river navigation and provide irrigation water, which will be turned into three 7,000-cfs irrigation canals by the new 1,100-ft-long Chainat diversion dam on the Chao Phya about 175 miles downstream. The project is thus of multi-purpose type and its effect on the economy of Thailand is expected to be tremendous.

Power from the dam will be transmitted to Bangkok over a 250-mile line, (230 kv single circuit on double circuit towers), but since the project is not scheduled for completion until late in 1963, and Bangkok's power demands are growing by leaps and bounds, YEA is also building a 75,000-kw steam plant in the city, which will be finished this Spring. Two more 75,000-kw units are in the plans for the future.

Contractor operations began on the dam late in 1958 after several years' work by Royal Irrigation Department forces in building access roads, camp facilities and power lines and holing through 12x12-ft pilot bores for the diversion tunnels. These tunnels were enlarged to 45 ft diameter by the contractor, and on Nov. 2 of last year the river was diverted through one of them.

The second tunnel, with its inlet at a higher elevation, is now being used as a transportation tunnel, but will be available for use when the river rises in the rainy season next summer. In the meantime, the upstream cofferdam will be carried to its full height of 150 ft.

In the completed project these diversion tunnels will become spillway tunnels, being connected to the spillway intake by two steeply inclined upstream bores. The intake will be controlled by four 33x52-ft radial gates, and the two tunnels will have a discharge capacity of 210,000 cfs.

The equipment and material supply problem has been a particularly difficult one to lick. The damsite is far from a railroad, highways were poor, and water transportation was available for only two months. Using trucks and barges, however, the $9 million worth of construction plant has finally arrived at the site and will soon be ready to go.

One interesting aspect of the logistics problem involves the cement supply. The government built a new cement plant at Takli on a marl deposit nearly 150 miles south, and clinker for a modified Type 2 low heat cement from this plant is being trucked to the site, where grinding facilities for 300 tons a day have been installed. Each day two convoys of twelve 15-ton truck trailers move clinker from Takli to Yanhee.

So far the plant has produced 100,000 tons of clinker (about one-third of the total requirement) and some 60,000 tons of it are stored at the damsite. When the grinding plant goes into operation, there are four 3,500 ton silos ready to receive the cement.

The basic reason for supplying clinker instead of cement is that it can be stored more economically—in piles rather than in silos. Having clinker and the grinding facilities at the dam also assures that temporary breakdowns in transportation from the cement plant will not slow the job.

The layout of the dam and its construction plant are shown on the accompanying drawing. Following the excavation job of about 1.5 million cu yd, concrete will be placed by three revolving cranes with 200-ft booms working from a steel trestle. They will be fed by transfer cars running from the mixing plant on the right abutment, where three 4-cu-yd mixers are installed. An interesting sidelight is that the first of these cranes to be assembled will be used to lift concrete up over the abutment to the spillway portal. With that job complete it will be run out on the dam construction trestle.

The mixing, batching and ice-making plants are designed to permit the placing of 4,000 cu yd of concrete a day. A quarry near the site will supply the concrete aggregates. Sand from the river will be used as far as possible.

Even though dam builders are never satisfied with the type of foundations they have to deal with, conditions at Yanhee are generally excellent. The rock is a limey hard quartzite relatively free of seams. Except at the entrances, the diversion tunnels required no shoring or lining. Considerable rock bolting is required at the upstream portals of the spillway tunnels, but the rock farther in has continued to be sound.

The principal construction difficulty so far encountered, other than the usual ones of benching out steep mountain sides for roads and equipment platforms, has been to provide a watertight cutoff for the upstream cofferdam through a deep bed of boulders in the river. H-beam sections with sheet-piling welded to both flanges were finally driven. Then the space between the sheetpiling was blown clean and filled with concrete. A system of wellpoints and pumps has been installed to handle seepage when and if it occurs.

The next step at Yanhee is to dewater the site so that the job of cleaning out the river bottom down to solid rock can be appraised. This job could be difficult or easy, but in either event concrete placing around the clock should be in full sway before many more months have passed. Completion of the dam and the power plant cannot come too soon for Thailand, which is impatient to take the further step in its economic development that it is sure the project will make possible.

THE MEKONG RIVER is Southeast Asia's greatest untapped water resource. This view is near Vientiane in Laos; farther south the stream gets much bigger.

• And someday, the Mekong—But there is a longer look into the future for Thailand and its neighbors in Southeast Asia. And this is toward the Mekong River, one of the world's great undeveloped streams. Rising far up in Tibet, it flows through China, touches Burma, forms the border between Thailand and Laos, and passes through Cambodia to empty into the South China Sea in South Viet Nam. Over 2,500 miles long, it ranks tenth in volume of discharge among the rivers of the world. Its potential as a waterway and for irrigation and power is tremendous, and its many tributaries in the various countries add to its importance.

This potential has been long recognized. But it was neglected until 1951 when the United Nations Economic

Commission for Asia and the Far East (ECAFE) made some initial investigations, followed in 1959 by a more detailed study and report. This spurred the four countries of Thailand, Laos, Cambodia and South Viet Nam to form a committee for coordination of investigations of the Lower Mekong Basin. Assured thus of local participation, the United Nations organized a mission headed by Lt. Gen. Raymond A. Wheeler, former Chief of Engineers, U. S. Army, to make a field survey and a report. The conclusion of the Wheeler report was that there was not enough basic data on the river to permit any construction planning to be done, that this data collection should be done by qualified engineering firms and that it would take five years and cost about $9 million.

The recommendations of the Wheeler report are now being carried out, with funds (or the equivalent in equipment and technical aid) provided by several nations: U.S., $2.2 million; France, $320,000; Canada, $1.3 million; Japan $240,000; New Zealand, $100,000; and Australia, $200,000. India has supplied rain gages, and Iran oil and gasoline for the survey vehicles and boats. There is also $1.4 million from the U. N. Special Fund, and the riparian countries have pledged $954,000 in local currencies. The work is coordinated by an executive agent, C. Hart Schaaf, of the coordination committee, appointed by the UN.

The largest contract is being carried out by Harza Engineering Co., Chicago, which is in charge of establishing a complete hydrologic network of instruments in the lower basin and training local technicians to use them. Canada's Photographic Survey Co., Ltd., Toronto, is carrying out an aerial survey, a Japanese group is surveying the tributaries, and engineers from Australia's Snowy Mountain Authority are studying some prospective damsites.

The Mekong survey is a unique example of international cooperation under the U.N. By 1963, when data collection is scheduled to be finished, there should emerge some definite plans for construction projects. Present indications are that these will start with dams on the tributaries, which will be more within the means of the Southeast Asian nations than huge structures on the main stream and will supply adequate power and irrigation benefits for some years to come.

Meanwhile, Thailand and her neighbors dream of what the Mekong can some day do for them, while they continue to expend most of their energies on projects that are more quickly realizable. Given peace, they also have a good chance to mold a growing measure of prosperity.

Lewis and Clark Shopping Center, Renton, Washington. Architects: Johnston and Campanella, Renton. Contractor: Paul Nels Carlson, Seattle.

Space provided: 17,700 sq. ft. of store area, 3,200 sq. ft. of storage space, and office of 70(sq. ft. *Roof framing:* lenticular Tim-Trusses with glulam chords, spaced at 15'-4" and covered with heavy timber decking. *Exterior walls:* pre-cast concrete with exposed aggregate. *Interior walls:* smooth architectural concrete and frame with plaster finish. *Heating:* gas unit heaters. *Ventilation:* direct air intake distributed by anemostats. *Lighting:* incandescent and fluorescent. *Roof surface:* 20-year built-up roof with white marble chip finish. *Area:* 21,600 square feet. *Cost per square foot* including fees and site development: $13.00.

Handsome, open appearance of these heavy timber trusses makes a conventional ceiling unnecessary, permitting a worthwhile saving in cost. Lenticular design reduces cubage and enables lower chords to support a 14-foot canopy at the front of the building.

TIMBER STRUCTURES, INC.

P. O. BOX 3782-C, PORTLAND 8, OREGON

Division Offices in Ramsey, N. J.; Schiller Park, Illinois; Dallas, Texas
DISTRICT REPRESENTATIVES IN MAJOR CITIES THROUGHOUT THE UNITED STATES
Affiliated Company: TIMBER STRUCTURES, INC. OF CALIFORNIA, Richmond

Member A.I.T.C. and Producers' Council

Oregon's spectacular southern coast is backdrop for . . .

. . . deep cuts, lofty fills,

Spectacular Cuts and Fills Mark

A spectacular 26-mile highway project along Oregon's scenic southern coast has been three years under construction so far—and it will be another year before the $18-million road opens to traffic.

Reasons for the slow pace: Fills range to 300 and 400 ft high along the canyon-pocked route; geological conditions are so uncertain that designers want fills to be in place two seasons before pavement is put on them.

Cuts are almost as spectacular as fills along the 15 miles of the route that opens up coastline never before viewed by motorists.

One bridge on the route will be Oregon's highest, towering 355 ft above streambed on steel towers in a 957-ft-wide canyon.

The route is U.S. 101 from Brookings to Gold Beach. It will supplement a tortuous county road started in 1919, not "completely graded and rocked" until 1928, and not paved until years after that.

The Oregon Highway Department began studying reconstruction of the old road more than 20 years ago. But the work was deferred for lack of money and because the route had relatively light traffic—barely 3,000 vehicles per day even now.

Decision to replace the old road, which is three and four miles inland, with a new one right along the coast was not entirely a choice of better scenery. The new alignment offered a greater mileage saving, a reduction in rise and fall, fewer degrees of curvature—and an estimated $300,000 cost saving.

• **Grading has been tough**—Spectacular cuts and high fills, many approaching a million yards, have been the outstanding feature of the construction effort. Geology of the area is so young and groundwater conditions are so difficult that design of cuts and fills is not entirely susceptible to rational analysis. So Oregon's highway engineers followed the most reasonable design possible, then required that grading should be left in place for two full winter seasons to see what trouble might develop. Their care paid off; no significant sliding has occurred in the fill sections.

Difficulty has been encountered at outlets of some culverts, and slides have developed on some of the cut slopes. These slides are being removed; the cuts are being sloped back with greater berm areas.

Horizontal drains are being installed at the bases of these cuts to reduce water pressure.

• **Difficult access**—Vegetation contributed to making access difficult on the rugged coastal right-of-way. This area of Oregon is almost semitropical in that its climate is mild and its rainfall reaches 80 to 100 in. each year from September to June. Ground cover—spruce, Douglas fir, salal, fern and other brushy plants—is very dense.

First step in making a fill was to clear the area of foliage. Then the alignment was excavated to solid, dry material. Perforated drain pipes of 8- to 18-in. diameter were placed in patterns conforming to the general topography at the bottoms of fills. Many miles of such pipe were installed to tap groundwater. Some of the lines carry water from beneath fills all year.

The natural material is generally wet and resists drying efforts, making compaction difficult. On some fills standard construction methods included aerating soils and mixing wet materials with dry to achieve the required density. On others, some of the soils were impossible to compact and were wasted in areas convenient for later development into wayside rests and parks.

Almost all the contractors used heavy carrying scrapers. In most instances, compaction was accomplished by the earth-hauling equipment. Sheepsfoot rollers were also used for compaction.

unusual culverts and . . .

. . . foundations for the highest bridge in the state.

Coast Road

• **High culverts**—Culverts were not placed at the bottom of the canyons, where it would be almost impossible to keep them from clogging in the narrow, tortuous stream beds.

By placing them part way up the fill, length of culvert was shortened. At the upstream ends of culverts, random fill was placed to form a relatively level area as the culvert intake. Some of these random fills are as much as 100 ft deep and stretch for 150 ft or more away from the intake. The thinking here was that debris and silt brought down the steep stream beds will be deposited on the random fill and will not plug the culvert opening.

At the downstream ends, these culverts, placed high in their fills, discharge down concrete chutes to the canyon bottom, the stream bed below.

Culverts in the Whalehead Creek fill rank with the largest installations in the U.S. They include one 72-in. and two 96-in. pipes. Length is 670 ft.

• **Many contracts**—The Oregon Highway Department divided the work into many contracts to keep contract size down and encourage more bidders. Spreading the many contracts over three construction seasons simplified their administration. In general, grading was separated from surfacing, and base course construction has been separated from paving. Contracts for paving are to be bid in 1961.

Scrapers are key machines in heavy grading operations.

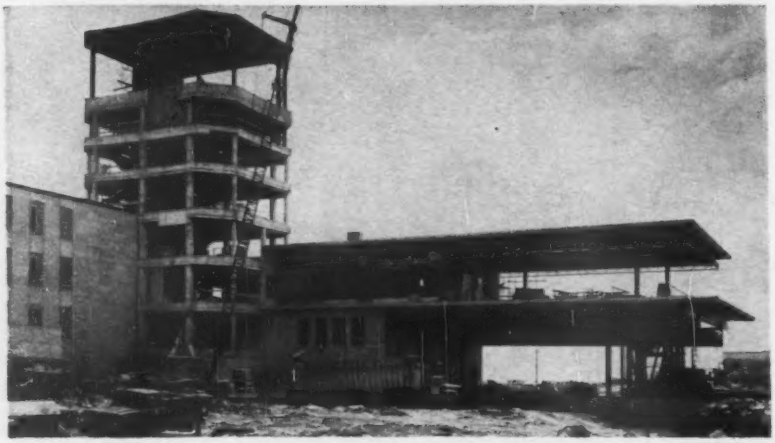
Grading contracts have included such structures as are needed—mostly culverts. A Peter Kiewit Sons' Co. job toward the north end of the project includes a 300-ft-long concrete box girder bridge with a 120-ft-maximum span. Kiewit, out of Omaha, has six of the project's 13 contracts.

The one spectacular bridge on the project, over Thomas Creek, towers 355 ft from bridge deck to creek bed. It is being built by Bethlehem Steel Co. under a $1,115,000 contract. The structure has a 848-ft length of steel trusses supported by two high towers and abutments at each end. The towers are 300 ft high from top of the piers to bottom of the trusses. Piers were constructed during the 1960 construction season. Steel erection is expected to begin as early this year as weather will permit.

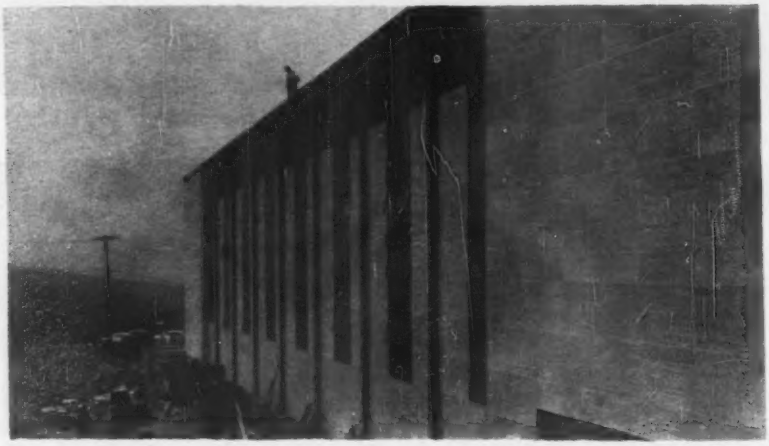
Morrison-Knudsen of Boise, Idaho, held the largest contract on the project—for $3.3 million worth of grading. Kiewit, as mentioned above, held the most contracts. Other contractors on grading and paving are Darkenwald & Harms, of Sacramento, and J. C. Compton and Central Heating Co.—both Oregon firms.

The highway is a project of the Oregon State Highway Department under W. C. Williams, state highway engineer. Construction is supervised by the staff of Division 3 of the department. Frank Morgan is division engineer.

Steel Research Gets a Broad View



MAIN BUILDING has a six-story tower topped by a lounge that commands a view of the valley below. Road passes through cafeteria wing at right.



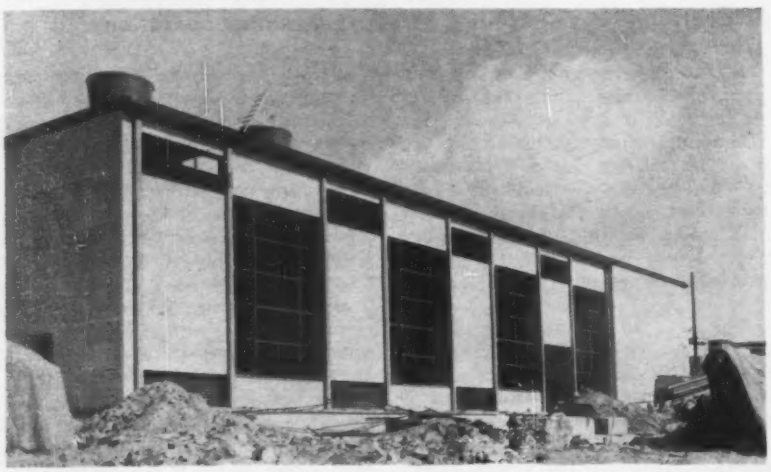
PILOT PLANT has top-hung windows and limestone facing. Exposed steel columns emphasize that it is a single-story, high-bay building.

If a telling ingredient of successful research is long range vision, Bethlehem Steel Co. is providing its researchers with the proper setting for it.

On the very top of a mountain 700 ft above and a mile south of its plant in Bethlehem, Pa., the company is building one of the nation's outstanding research centers. Here, on the 100 acres in the center of a 1,000 acre wooded site, five buildings are nearing completion in the first phase of a three-phase program. Two more buildings in the second phase have been begun, and the third phase will follow in a year or two. All will command a 50-mile view of the Lehigh Valley.

Research activities now scattered in a dozen locations will be brought together at the $25-million center. There, solutions to all manner of problems related to improvements in steel making and to new types of steel and steel products will be sought. In its several buildings the center will provide research facilities for process metallurgy, mechanical engineering, physical metallurgy, chemical engineering, ceramics and physics. Not only laboratories, but pilot-type manufacturing plants are included in the center.

In the choice of the site, the selection of the arrangement and size of the buildings, the development of their architecture and structural design and the carrying out of the construction, the project presented an unusual number of interesting problems. Ralph Walker of Voorhees, Walker, Smith, Smith & Haines, the architects, characterizes it as the most exciting and challenging of the many research centers the firm has designed.



POWER PLANT has alternating bays of large fixed windows and limestone panels with narrow windows above and ventilator grills below.

WAREHOUSE is inclosed in random ashlar to blend with the site. Space frame roof

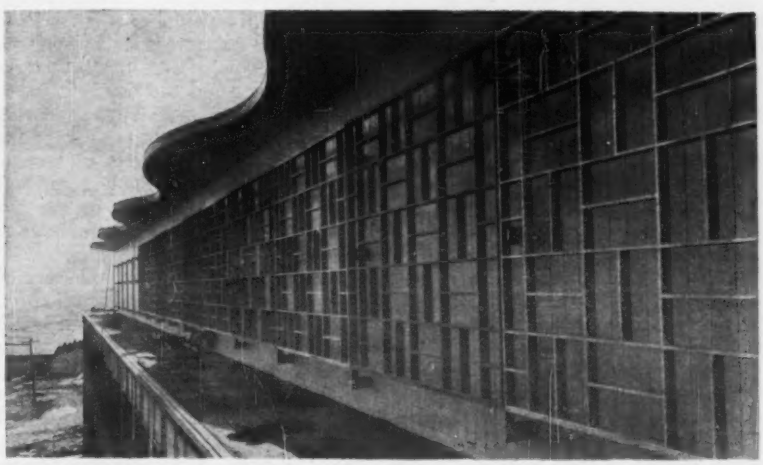
at Bethlehem's Mountaintop Site

KEY BUILDINGS of Bethlehem Steel's new research center are spread over 100-acres on a 1,000 acre site. They are (1) the main administration building, (2) pilot plant building, (3) power plant, (4) warehouse-machine shop and (5) laboratory.

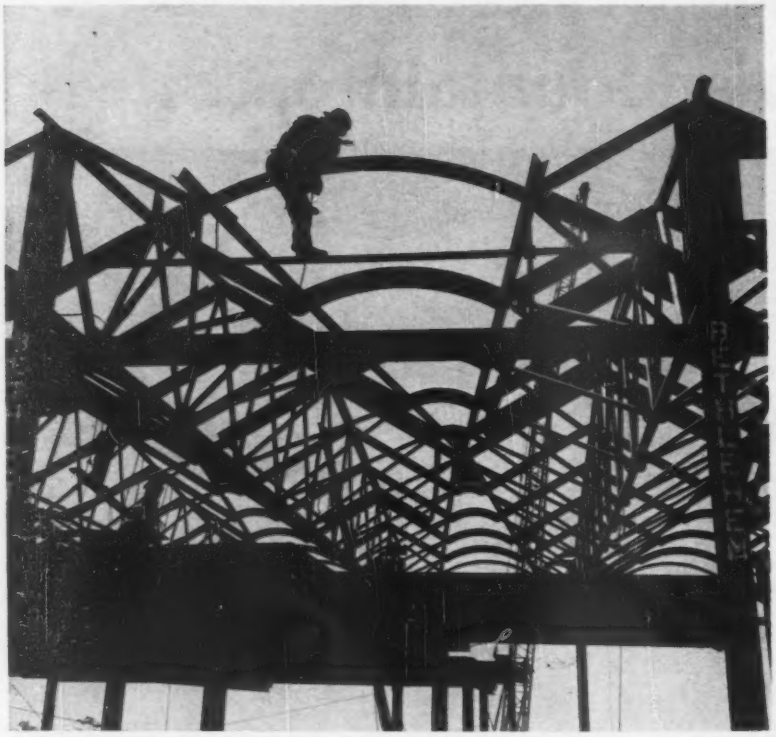
An area of approximately 100 acres in the center of a 1,000 acre plot directly on top of the mountain was chosen as the location for the research buildings. The architects' problem was to develop a building layout for this wild and wooded site, and then to design the structures for efficient research use and in a style that would suit the mountaintop setting. Being a steel company project, it was, of course, desirable to use steel. But, probably fighting a temptation to go all out in this respect, Bethlehem merely gave the architects a simple specification, "Use steel, but don't abuse its use."

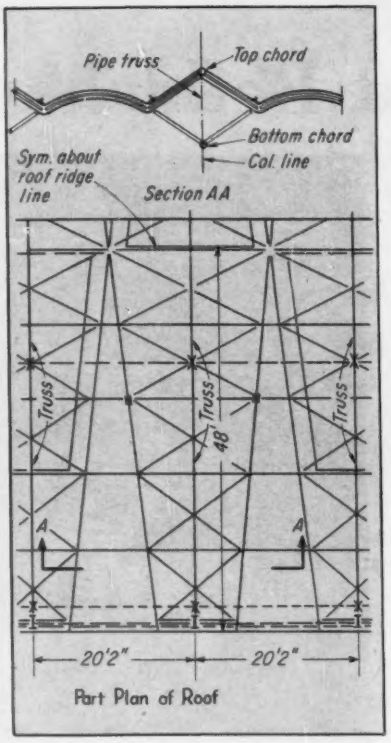
The resulting buildings are steel framed. Wherever possible cellular steel decking is used in the floors, and all partitions are steel. Some steel is also exposed on wall exteriors, and windows are set in steel frames, but for the most part the walls are Indiana limestone and random ashlar to fit in

provides a silhouette of alternating ridges and arches.



LABORATORY wing of the main building has a scallop-edged roof. Walls of top floor are insulated steel panels masked by steel grill.





UNUSUAL SPACE FRAME roof of the warehouse-machine shop is formed by welded pipe trusses of 96-ft span braced apart by inclined pipe struts and arched structural members. Ridge frames over the trusses complete the roof framing.

with the rustic surroundings of forest and outcropping rock. Likewise, all exposed steel will be painted a gun metal color.

Three of the five buildings now nearing completion are grouped around a 200-ft-dia pool centered in an expanse of lawn and equipped with spray nozzles to create an attractive water display. The pool is the cooling pond for the air conditioning systems.

On the east side of this pool is the main building, containing offices and laboratories. South of the pool is a shop and warehouse building, and on the west side a pilot plant building. There will be three wings to this building; one of them—for a process metallurgy pilot plant—has been completed in the first phase. Construction is now under way on the other two wings, which will house pilot plants for mechanical engineering and for rolling mill studies.

The two other completed buildings are at the western end of the site, and house, respectively, the research center's power plant and the photographic lab of the company's publications department.

Phase two work, now under way, will also include a chemistry pilot plant at the extreme western end of the site. Phase three buildings, to house pilot plants related to coke making and ore processing, will be located at a lower level northeast of the main building.

The main building, three stories high, is basically U-shaped, although a wing extends at right angles to each of the legs. The base of the U, 142 ft long and 48 ft wide, accommodates the large entrance lobby, with offices above. The left leg of the U, 131 ft long and 43 ft wide, houses the executive offices, while the right leg, 315 ft long and 66 ft wide, is occupied by laboratories. A 43-ft-wide, 136-ft-long wing perpendicular to the laboratories affords office space for the research personnel.

All floors in office areas are of cellular steel surfaced with slag concrete. Where heavier loads prevail, as in the laboratories, solid concrete slabs are used.

All corridors are on the centerlines of the wings, and the one in the laboratory wing is lined either side with enclosed vertical wells through which all piped and wired services are brought to the laboratories, which occupy all three floors. A penthouse on the roof of the laboratory wing is entirely given over to mechanical equipment.

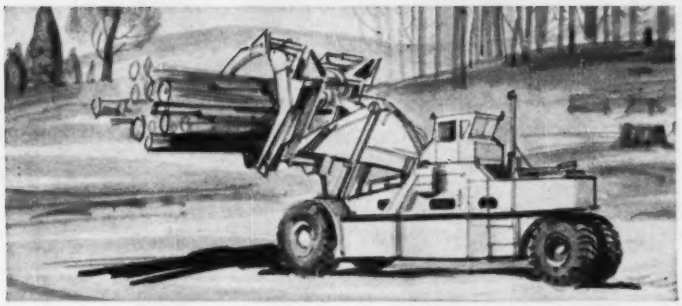
Slightly set back from the lower portion of the building, this penthouse is enclosed with insulated steel panel walls and is windowless. To soften the severe appearance of these walls, in contrast to the windowed walls with limestone spandrels of the lower stories, the architect masked them with a decorative steel grill. The distinctive appearance thus accorded to this portion of the building is further enhanced by a roof with wide eaves; the edges of the eaves are scalloped in large radius curves. Plastic bubbles spaced along the centerline of this roof admit daylight to this enclosed penthouse floor.

The other distinctive feature of this main building: a six-story octagonal tower housing a lounge on its top floor, and a two-story cafeteria wing, both located at the base of the left leg of the U. A controlling requirement for the tower was that the view from the lounge should encompass the company's steel plants in the valley below. Preliminary to the design, therefore, a temporary tower of tubular steel scaffolding was erected to determine the height at which the floor of the lounge should be placed.

In the two-story cafeteria wing, the ground floor is open to permit passage of the research center's circumferential road, and the dining accommodations are on the second floor. This second floor is carried across the driveway by two welded girders 82½ ft long, built up of a 60x1½-in. web plate and 22x3-in. flange plates. Each girder weighs 35 tons and is continuous over three supports. The girders, spaced 45 ft apart, support 75-ft-long floorbeams of 36-in., 150-lb wide flange sections. Both these long floorbeams and the 35-ton girders came to the job in single pieces and were lifted into place by a crawler crane.

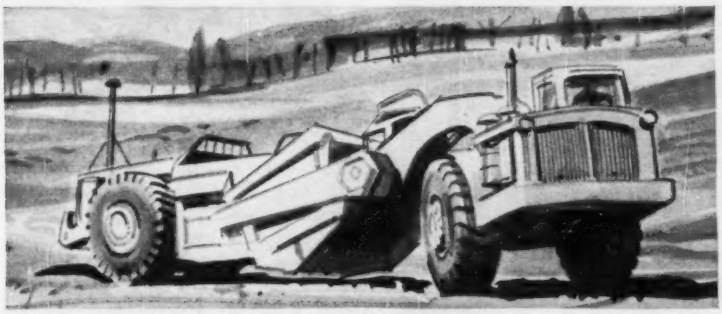
(*Story continues p. 44*)

ALLISON
speeds big loads
TORQMATICALLY



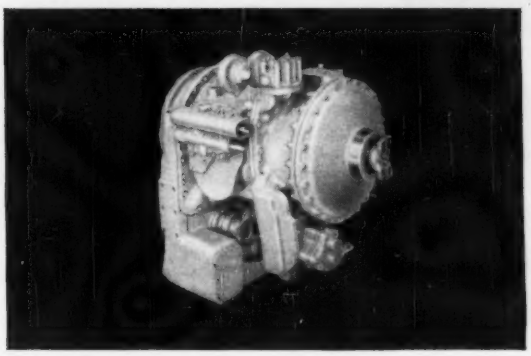
IN "LUMBER JACKS"

Despite a 70,000-lb. lift and carry capacity, the Wagner LJ 3-70 Lumber Jack is designed for fast work in mass-production operations. Its CRT-5630 TORQMATIC DRIVE lets the operator quick-shift at full throttle to speed loads—one reason why it is standard equipment in this machine.



IN TWIN-POWER SCRAPERS

One contractor who owns a Euclid TS-24 Twin-Power scraper reports: "One Twin is equal to five 130-h.p. crawlers with 10-yd. tow-type scrapers." Another says: "One Twin is equal to three 12-yd. self-propelled scrapers plus pusher." Typical? You bet. And the CRT-5630 is one of the TORQMATIC team members that make twin power possible.



IN ANY 200-300 H.P. UNIT

For that scraper, king-size loader or four-wheel prime mover, you'll find faster job cycles and lower maintenance costs with the job-proved CRT-5630 TORQMATIC DRIVE.

It has 3 speeds forward and 3 reverse, planetary direction and range gearing, transfer gearing drop box incorporating front- and rear-output flanges. With six choices of TORQMATIC converters to give that perfect engine match, the CRT-5630 is ideal for a wide range of machines and jobs.

Want more information? Send for the fact-packed CRT-5630 brochure today.

Allison TORQMATIC

TORQMATIC® DRIVES

The world's most complete line of hydraulic drives

Over 980 models used by 108 manufacturers in 100 to 525 H.P. equipment

Allison Divison of General Motors
Dept. NR-2, Indianapolis, Indiana

Please send me application data on your CRT-5630 TORQMATIC DRIVE.

Name_____

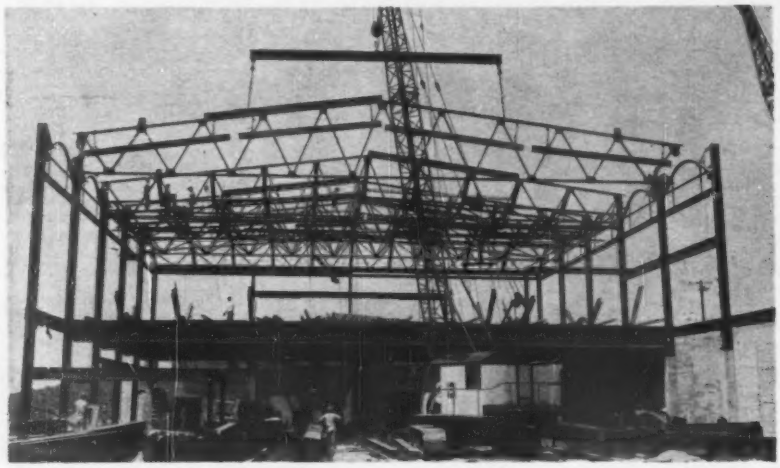
Title_____

Company_____

Address_____

City_____ State_____

LIGHT, AIRY MACHINE SHOP occupies top floor of the warehouse. Space-frame roof is inclosed with skylights and ribbed steel decking covered with copper sheeting.



CRAWLER CRANE ERECTS the pipe trusses. Because their 96-ft-length made them limber, trusses are temporarily stiffened by steel channels.

All of this steel framing is left exposed and painted in attractive colors. Long spans are also used in the roof framing, while the walls of this cafeteria section are almost entirely of tinted glass in panes 7½ ft wide and 19 ft high.

The most unusual building of the research center will be occupied by a warehouse on its ground floor and machine shops on its second floor. Its unusual feature is its roof which, in its 245 ft length, is spanned by eleven 96-ft span welded pipe trusses 13½ ft deep at the center and 6 ft deep at the ends. In combination with the bracing used between them, these trusses constitute unique space frames that are stiff and strong yet afford a light and open appearance to the interior of the building.

The space framing in each 20-ft bay between trusses is made up of inclined pipe struts, their lower ends attached at the bottom chord panel points of the truss while their upper ends are joined to arch-shaped structural members disposed along the centerline of the bay. The lengths of these arch shaped members diminish progressively from the wall line to the centerline of the building, so that in total they constitute a section of a cone with its apex at the building centerline.

To complete the bay framing, inclined structural members span between the arched members and the top chords of the trusses. The resulting roof, therefore, has a ridge type outline over the trusses and an arch shape along the center of each bay.

There are two drainage valleys in each bay where the ridge and arch roof elements intersect. And these valleys diverge from the center of building outward because of the conical shape of the arch portion of the roof. The roof is covered with cooper sheeting on steel decking, except where it is interrupted by skylights.

The 96-ft span trusses are fabricated from 5-in.-dia heavy-duty steam pipe. Each truss weighs 5¼ tons. Rigid when braced, the trusses were unusually limber as erection pieces. Steel channels, therefore, had to be lashed along their webs and chords during erection. A crawler crane with a strongback and slings attached to its hook lifted the trusses into place.

The other buildings of the center are less unusual, but each is designed to be attractive as well as functionally efficient. The pilot plant building is laid out in a three-finger plan, each finger or wing housing a different operation on a single high-bay floor. All are tied together across the front by a two-story office and laboratory section.

The wing that is now completed is 56 ft wide, 215 ft long and 45 ft high from the floor to the underside of the roof trusses. An overhead crane spans between girders bracketed to the wall columns. These columns are exposed on the outside of the building where they form a part of the wall pattern, which includes limestone panels and top-hung, steel casement windows. The other wings will be duplicates.

The power plant which can be expanded 50% to meet phase three demands, contains three boilers and two turbine driven centrifugal compressors for chilled water. It is 128x81 ft in plan, steel framed and with walls that combine limestone, steel casement windows and metal grills. The boilers will be fired by oil in the winter and gas in the summer. The photo lab building has windows on only two sides, since large areas of it are devoted to dark rooms for photo processing.

Other special construction, incident to creation of the research center, was largely confined to site preparation. There were no access roads up the mountain. The top had to be cleared of trees, and when cleared, the area offered scant space for disposal of excavated material or, later, for stockpiling construction materials. Borings indicated that both solid rock and glacial till would be encountered, but in an unpredictable pattern.

Each of these difficulties was tackled in turn. An access road being the first requirement, it was decided to build it on the alignment of the permanent north approach and to final dimensions and grades, but without a paved surface. Thus the 3,000-ft-long road was constructed to full 22 ft width, with 10 ft shoulders. The road was constructed with a 6-in. slag subbase and a 3 in. penetration macadam intermediate course.

With a maximum grade of 9½%, this road provided efficient access to the site for the many truck loads of construction materials and equipment. One material that was not trucked was concrete. Although the entire project required only 25,000 cu yd, it was decided to set up a central mixing plant on the mountain top. That would avoid possible traffic delays to truckloads

(*Story continues p. 49*)

Now...one coat of enamel combines rust inhibition, durability and color retention

For the first time these three factors can be provided in one paint containing M50® pigment.

Here's news of a new type of enamel that greatly simplifies the painting of highway signs.

With these new enamels, *one coat* is all that is needed. This single coat combines . . . for the first time . . . more rust inhibition than ordinary primers with even greater durability and "color fastness" than most finish paints. What's more, except for white, these enamels can be made up in all the colors normally used in highway sign painting.

A unique new pigment...

M50® basic lead silico chromate... gives the one-coat enamels their exceptional properties. In this pigment, one of the most effective of all rust inhibitors, basic lead chromate, is solidly fused to an inert core. In metal protective paints, exposure tests have proved that this pigment maintains high rust inhibiting activity for years and substantially retards color fading.

Greatly inhibits under-the-film rust creepage, as well

As you have probably noticed, when ordinary enamels are nicked or damaged in service, the rust that starts spreads under the paint in no time. As this rust creepage continues, paint flakes off to open the way for further corrosion. The new *M50* one-coat enamels greatly reduce such premature destruction of the paint film . . . help keep sign repainting needs down.

Before you order paint again...

Look into these unusual new enamels. They can be made up by your regular suppliers in standard colors.

M50 an **oncor®** *Pigment...A Development of* **National Lead Company**

General Offices: 111 Broadway, New York 6, N.Y.

Job site. Today, it's being excavated and graded. Tomorrow, it will sprout office buildings, apartments and a shopping center.

Washington contractor simplifies purchasing,

GULF MAKES THINGS

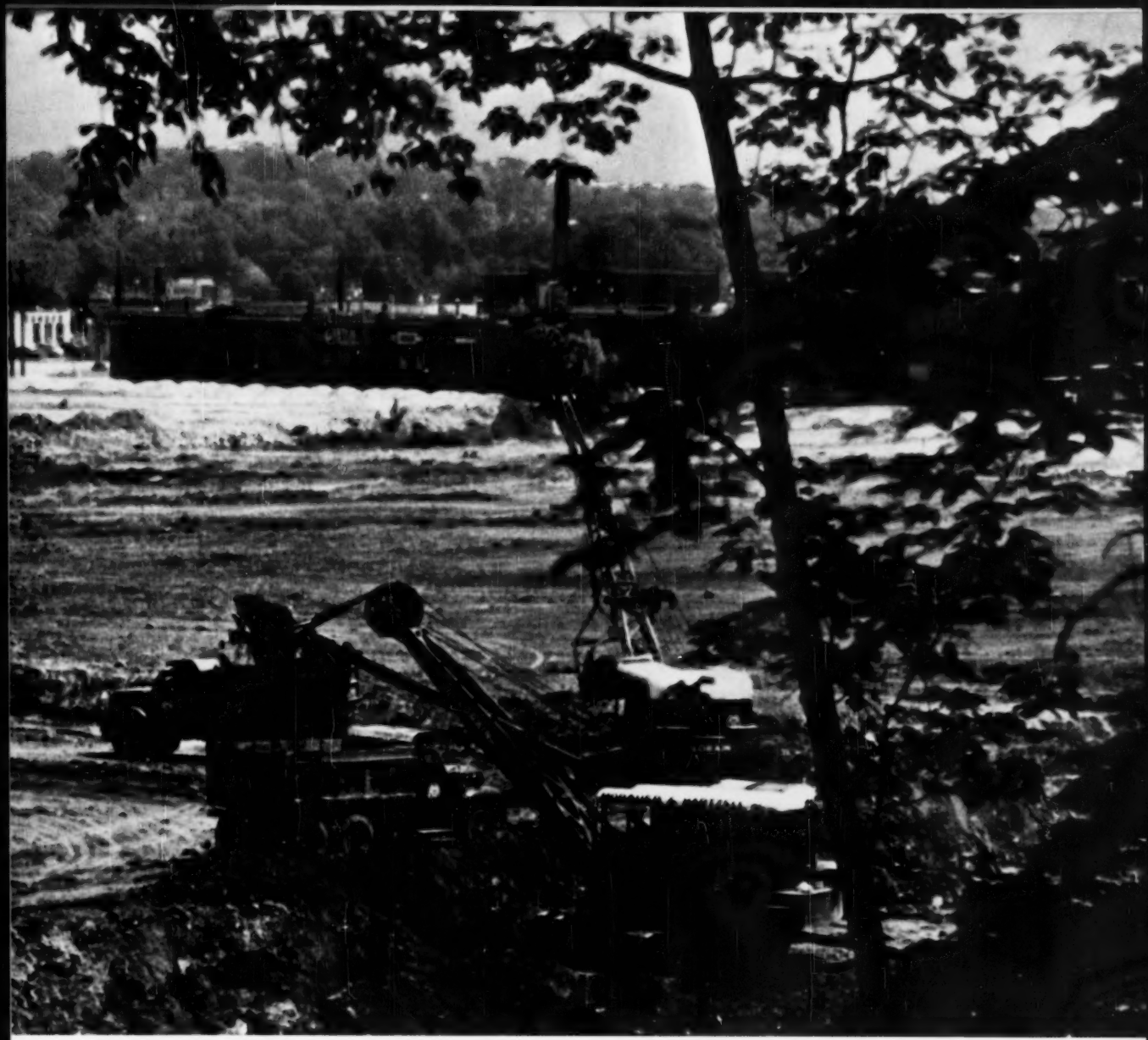
Morauer & Hartzell, Inc., does a lot of excavation work in the metropolitan area of Washington, D.C. Much of it is tough work involving stubborn old building foundations. Many of the job sites, like the one above, are confined by built-up areas.

G. M. Waldrep, Shop Superintendent noted, "We don't have much room to maneuver on this kind of job. Confined working area, plus the fact that we have several similar jobs going on at the same time, means our preventive maintenance program must stress simplified lubrication and mobility of lubricating equipment."

To get mobility, Morauer & Hartzell outfitted two lube trucks identically. These shuttle between jobs keeping the effective lubrication program right on schedule. And, it does away with the need to stockpile oils and greases at every job site.

Working with a Gulf sales engineer, Morauer & Hartzell set up a simplified lubrication program using multi-purpose Gulf products. Two oils have provided a broad safety factor for all of their equipment: Gulf Super-Duty Motor Oil for high output earth movers and Gulf Dieselube for other equipment. Gulflex® A has been used for all grease-lubricated applications and Gulf Multi-Purpose Lubricant 90 for transmissions, rear axles and other enclosed gear drives. Finally, for fuel needs, Morauer & Hartzell has used Gulf diesel fuel and Good Gulf® Gasoline.

Summing up, Mr. Waldrep said, "With this standard-



saves time and money with Gulf® products...

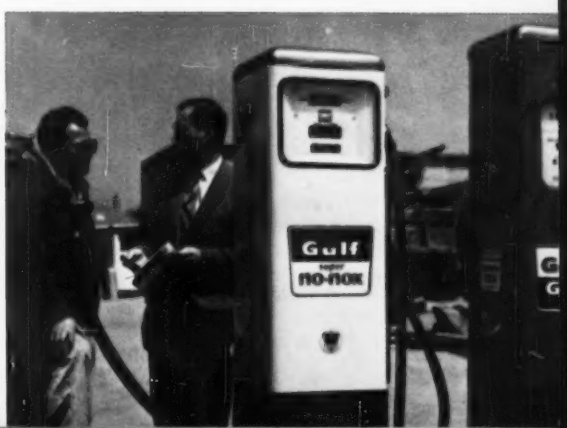
RUN BETTER!

ized program we have eliminated stockpiles at every job site. We have simplified purchasing. We have saved time."

Gulf's engineering service and quality products can save you time and money on your next project. May we have the opportunity to prove it to you? Call your nearest Gulf Office.

GULF

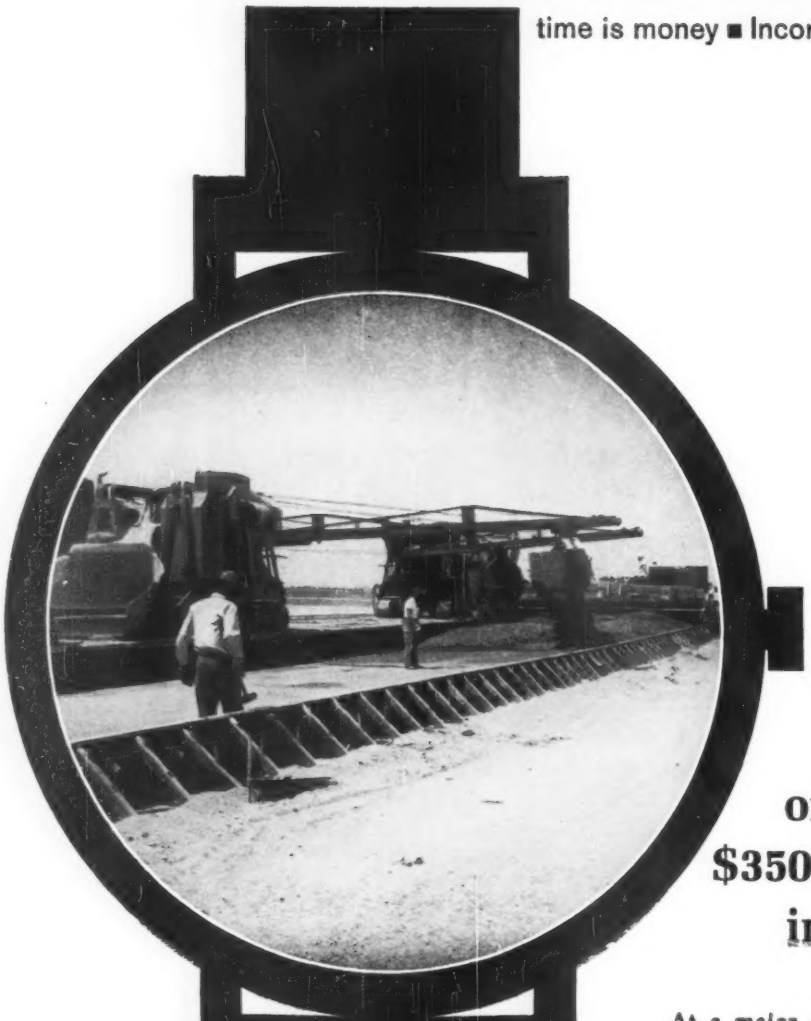
GULF OIL CORPORATION
Dept. DM, Gulf Building, Houston 2, Texas



G. M. Waldrep, left, Shop Superintendent of Morauer & Hartzell, and Fred Pope, Gulf Sales Engineer, beside pumps that delivered quality Gulf fuels at a job site recently.

GO-9-3290

time is money ■ Incor saves you time ■



Seymour Johnson Air Force Base Goldsboro, N.C. Supervision: U.S. ARMY CORPS OF ENGINEERS, Wilmington, N. C.—Contractor: BALLENGER PAVING COMPANY, Greenville, S. C.

on this job, $350,000 was saved in time alone

At a major air defense base, 14,282 feet of asphalt pavement were replaced with portland cement concrete to handle our heaviest bombers. Planning with Incor 24-hour cement, the successful contractor bid $300,000 under the original estimate of $1,500,000. He then finished the job in half the time allotted, saving the Air Force *another* $350,000 set aside to maintain the base's squadrons at other locations. Combined savings thus totalled $650,000.

Whenever Incor is a "job ingredient" it means savings in time and money. Incor gets the job done faster, releases men, forms and high-cost equipment for other work. Why not estimate *your* next job with Incor? The savings may surprise you.

AMERICA'S FIRST HIGH EARLY STRENGTH CEMENT

INCOR®

LONE STAR CEMENT CORPORATION, NEW YORK 17, N.Y.

of concrete coming from town. Concrete ingredients could be brought up at any convenient time and stockpiled.

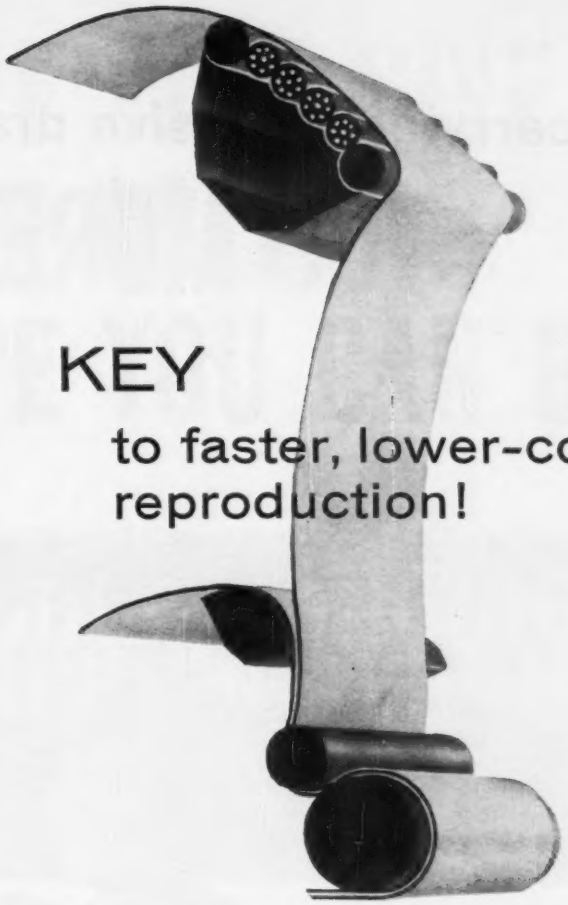
About 50 acres of scrub brush and trees with 4- to 8-in.-dia trunks had to be completely cleared before excavation could commence. Grading was kept to a minimum to retain as much of the natural terrain as possible. Even so, about 90,000 cu-yd had to be moved to level and terrace the site as required. In addition, some 8,000 cu yd of excavation was required to provide for retaining walls and cribs. Basement excavation for the five buildings accounted for another 60,000 cu yd.

The research center is served by three separate sewers—for storm water, sanitary wastes and laboratory wastes. There are also water lines, electrical conduit, gas lines and a pneumatic tube line underground. All of these utilities were placed in trenches, some as much as 22 ft deep. The 10 miles of trench required 40,000 cu yd of excavation.

A considerable part of the site was underlain with rock, but only infrequent outcroppings indicated its presence. This caused difficulty in trenching and pipelaying. When rock was encountered, all work stopped until it could be blasted and removed. To speed the work, the trenching crew was at first given a 200-ft headstart on the pipelaying and backfilling crews. Having so much trench open at one time, however, was deemed hazardous, so the final solution was to have a crawler-mounted air drill prospect ahead, taking borings every few feet and marking the rock locations. Crews then drilled and shot the rock, so that when the trenching crew came along its 1½-yd backhoe could open the trench in 20-ft sections without delay.

The variability of rock locations and of the depth of rock below the surface also posed building foundation difficulties. Concrete piers or steel H-pile to rock were used, depending upon which was most economical for the indicated rock elevation. Field determination of rock elevations made necessary some substitutions of piles for piers and vice versa. The 10-in. steel H-piles were delivered 40 ft long, driven to refusal and cutoff. Considerable wastage resulted, but the over-all result was more economical.

In addition to Voorhees, Walker, Smith, Smith & Haines, the architects who handled the over-all project, Clarke and Rapuano, consulting engineers, New York, developed the road system and other off-site work. Turner Construction Co., New York, is the general contractor. Excavation and site preparation were carried out under a subcontract with American Construction Co., Hartford, Conn. All steel erection was by Bethlehem's own forces.



KEY

to faster, lower-cost reproduction!

Heart of the Paragon-Revolute Star is its unique separation and development system – key reason why the Star will provide you more print production, per machine, per labor dollar.

The Star's air suction separation device is virtually infallible. At high speed, or any speed, the tracing and print are picked off the exposure cylinder by a unique air-knife and automatically separated by air suction.

In the Star's developing section, exclusive, patented features assure full development in one pass, at any speed. A preheater tube prepares incoming ammonia for "demand" vaporization. Perforated stainless steel rollers allow virtually 100% exposure of sensitized sheets to the vapor. Prints travel a shorter route, come through clearer, faster, and there's ¼ to ½ less ammonia consumption.

You owe it to yourself and your company to investigate the Revolute Star before buying any whiteprinter. The coupon brings you full details by return mail.

PARAGON REVOLUTE

DIVISION OF CHARLES BRUNING CO., INC. BRUNING

77 South Avenue • Rochester 4, N.Y.

Paragon-Revolute
Advertising Department, Dept. P1-U
1800 Central Rd., Mt. Prospect, Illinois

Please send me information on your Star whiteprinters. Please arrange for a representative to contact me about a demonstration.

Name_____ Title_____

Company_____

Address_____

City_____ Co._____ State_____

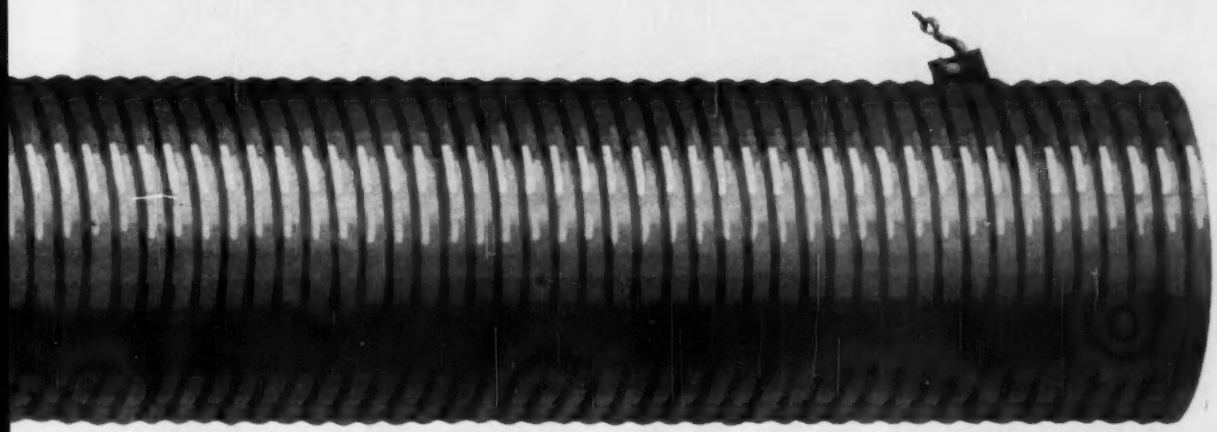
For carrying corrosive drainage..... **THIS YOU MORE SERVICE... THAN ANY**

Artist's drawing shows ASBESTOS-BONDED in cross section.

Steel

. . . for durability, strength, economy

ARMCO PIPE WILL GIVE DOLLAR FOR DOLLAR... OTHER PIPE YOU CAN BUY



New steels are born at Armco

The Pipe is Armco ASBESTOS-BONDED®, a corrugated metal drainage pipe with unique corrosion resistant properties. Durable, inert asbestos fibers are imbedded in the zinc coating on the steel pipe while the zinc is still molten. Then a sealer-saturant is applied. The result is the most durable drainage structure known. Dollar for dollar, Armco ASBESTOS-BONDED will outlast . . . materially *and* structurally . . . any other pipe you can buy. Our customers have proved it!

Armco ASBESTOS-BONDED Pipe is one of a complete family of service-proved drainage products. Let us send you a copy of the latest catalog of Armco Sewer Structures or Armco Corrugated Metal Pipe (check one or both in coupon). Armco Drainage & Metal Products, Inc., 4481 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
4481 Curtis Street, Middletown, Ohio

☐ Send catalog of Armco Sewer Structures (CMS-7458)
☐ Send catalog of Armco Corrugated Metal Pipe (CMS-5858)

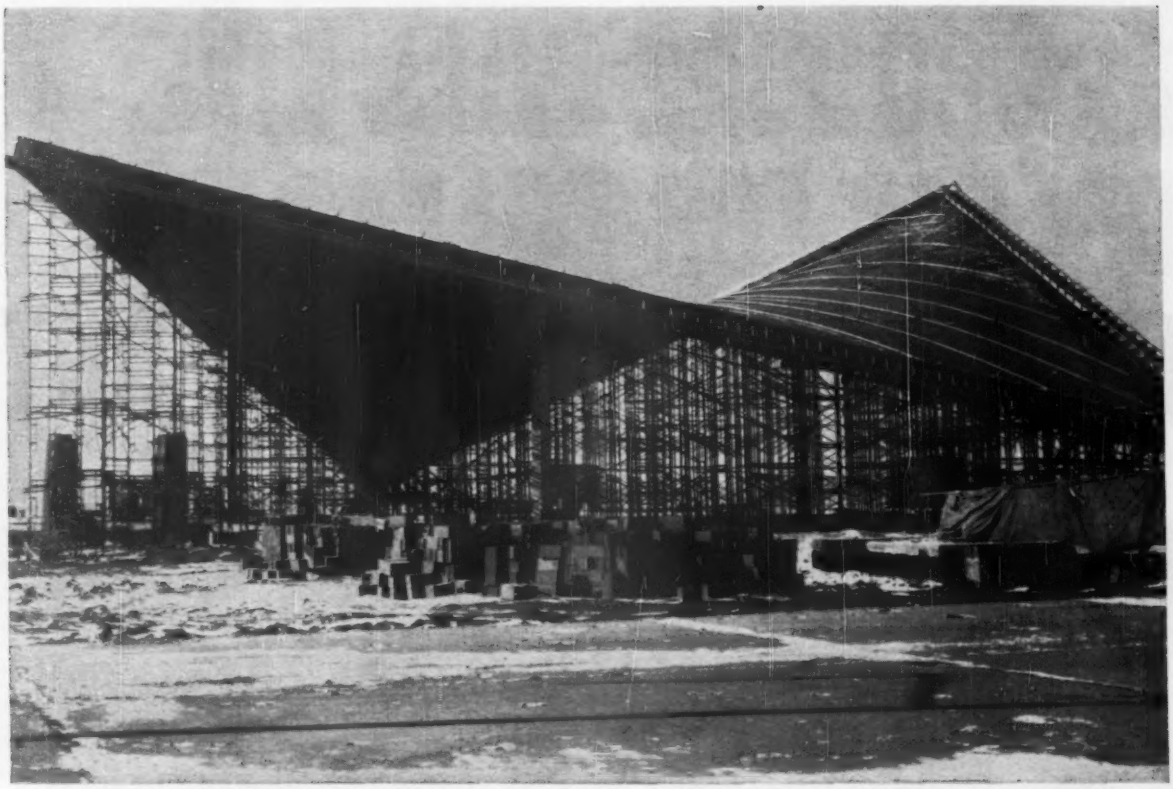
Name_____

Organization_____

Address_____

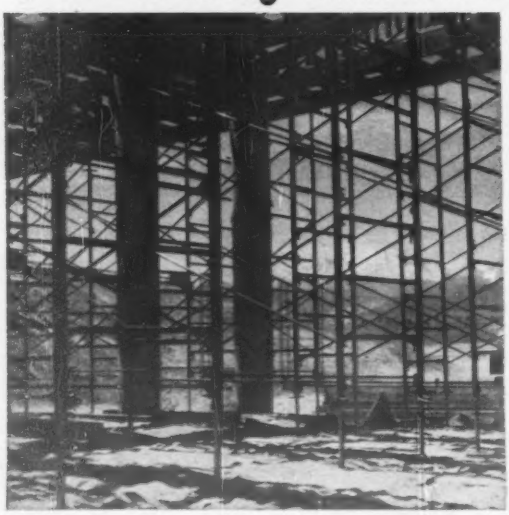
City_____ Zone_____ State_____

ARMCO Drainage & Metal Products



ADVANCE

. . . shoring scaffold that stands out and stands up!



Top: ADVANCE Shoring Scaffold used for construction of Cheyenne Municipal Air Terminal, Cheyenne, Wyo., John W. Strahan Const. Co., Riverdale, Mich., Gen. Contr.

Bottom: Colorado Springs Bridge Overpass for Freeway is shored with ADVANCE 10M Heavy-Duty Scaffold—A. S. Horner Const. Co., Denver, Colo., Gen. Contr.

Clean lines . . . unequaled self-locking frame and brace design . . . absolute safety . . . ever-lasting usefulness—these are but some of the reasons for the growing acceptance everywhere, of **ADVANCE** Shoring Scaffold for light, medium and heavy concrete construction. Contractors know that **ADVANCE** Shoring Scaffold affords them **value-plus** . . . through speed of erection, durability, long life and dismantling ease. It accelerates their pouring schedules, cuts labor costs, earns them **greater profits.**

Field-experienced **ADVANCE** Shoring engineers are readily available to supply you with working plans, bills of material and job estimates without cost or obligation. Contact your nearest **BEAVER-ADVANCE** dealer today . . . tomorrow for sure!

BEAVER-ADVANCE

CORPORATION

ELLWOOD CITY, PENNSYLVANIA

Over 75 Distributor Outlets from Coast to Coast in the United States

TUBULAR STEEL SCAFFOLD • HEAVY-DUTY SHORING SCAFFOLD • HOISTING TOWERS & CONCRETE EQUIPMENT •

Bucyrus-Erie Adds Power Shovel

The 270-B, an 8-to 18-cu-yd electric power shovel, has been added to the Bucyrus-Erie line of excavators. The rig has a 100-ft-long, one-piece boom, a 54-ft-long dipper stick, and an electrically operated dipper trip. The conventional power plant for the 270-B is a 250-hp, 230-v motor, but for long-reach work, where speed is important, a 375-hp, 230-v motor can be supplied.

The revolving frame of the machine is of welded structural steel; the crawler frame is made up of structural steel plates and castings welded together. All gears of the principal machinery are enclosed and run in oil.

The operator's cab is elevated so that the operator can better watch his work. Bucyrus-Erie Co., South Milwaukee, Wis.

Lab Compactor for Soil Tests

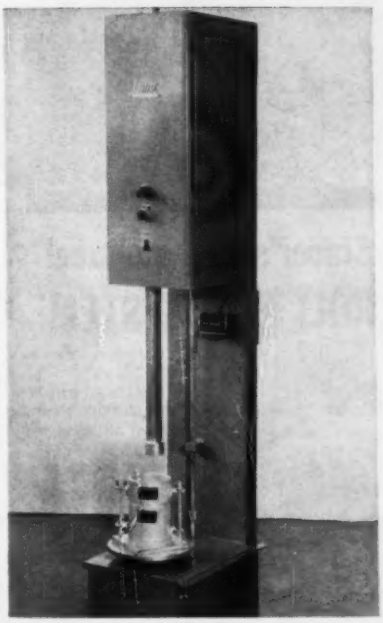
A new mechanical compaction apparatus for laboratory use is designed for rapid and uniform performance of standard and modified soil compaction tests.

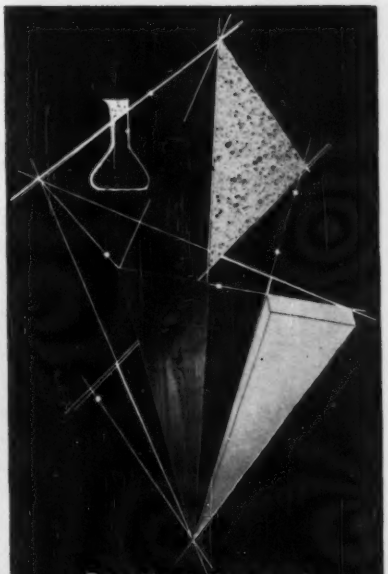
It accommodates both standard 4-in. and modified 6-in.-dia testing molds. The unit operates with the standard compaction hammer, which weighs 5.5 lb and has a drop of 12 in. For modified compaction tests, the hammer weight can be increased to 10 lb and the drop distance adjusted to 18 in. Provision is also made to adapt this device for tests using U. S. Bureau of Reclamation specifications.

The unit has an automatic counter that stops the machine when a predetermined number of blows has been reached.

The compactor requires floor space of about 13 in. x 23 in. and is approximately 60 in. high. Soiltest, Inc., 4711 W. North Avenue, Chicago 39, Ill.

(New Products continued p. 54)





Practical Research and Development...

turning new and existing raw materials into new products for the construction industry

Even in the space age, there is a vital necessity for down-to-earth research. To exploit the rewarding areas of product and market development requires a well-rounded organization of engineers, experienced in all phases of construction planning, design and field supervision.

The Cerand Corporation is an unique organization, a civil engineering research and development firm engaged in opening up these promising new fields. Cerand is made up of men with extensive on-the-job knowledge of the techniques, equipment and materials used in the construction industries. Cerand can help your firm:

- Develop new products for the construction fields.
- Gain new construction markets for your raw materials.
- Solve complex civil engineering problems.

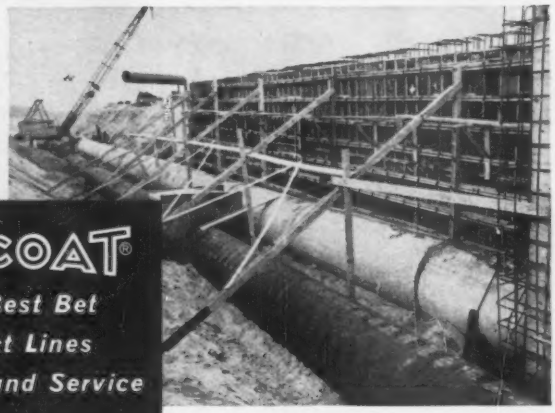
For specific examples of how Cerand can help your firm, send for our definitive brochure.

Product and market development for the construction industries

the cerand corporation
Dept. 31
285 Columbus Avenue, Boston 16, Mass.

NO PLACE TO GAMBLE

Joints on steel plant water line are TAPECOATED to provide protection equivalent to coating on the pipe.



TAPECOAT®
is Your Best Bet to Protect Lines in Underground Service

You take no chances when you specify TAPECOAT coal tar coating in handy tape form for pipe, pipe joints, fittings, couplings, tanks, tie rods, and conduit on new construction or for maintenance.

Since 1941, TAPECOAT has proved its superiority in resisting moisture, acids, alkalis, and other severe corrosive and abrasive conditions.

TAPECOAT comes in rolls of 2″, 3″, 4″, 6″, 18″ and 24″ widths. It is easy to apply with the use of a torch to bleed the coating which serves as both bond and protection. No skilled help required.

A TAPECOAT sales and service engineer is ready to help you on any corrosion problem. Write for details today.

Originators of Coal Tar Coating in Tape Form

The **TAPECOAT** *Company* *1551 Lyons Street, Evanston, Ill.*

Representatives in Principal Cities

Manufactured and distributed in Canada by The Tapecoat Company of Canada, Ltd.
25 Haas Road, Rexdale, Ontario

POSEY WORKS FOR BETTER-
TUNNEL FORMS

Adjustable box forms, non-telescoping round forms for sewerage, water, storm sewers or vehicular tunnels.

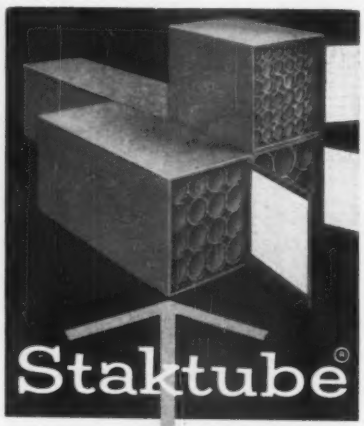
For FREE illustrated catalog showing job application, write:

POSEY IRON WORKS INC

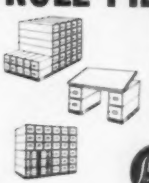
Custom Fabrication For Over 50 Years

DIVISIONS:
• Iroquois Asphalt Plants • Mixers and Blenders
• Tunnel Forms • Industrial Heating • Foundry
• Large OD Steel pipe

561 S. PRINCE STREET LANCASTER, PA.



Stacor's lifetime steel ROLL FILE SYSTEM

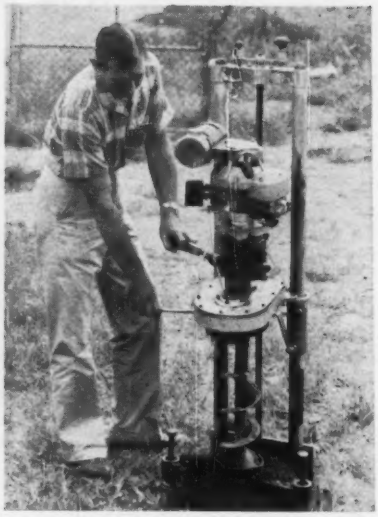


"Easy-file easy-find" system to keep rolled prints, plans, maps clean, safe. 32 sizes—8 lengths, 4 tube diameters.

Send NOW for illustrated catalog

STACOR EQUIPMENT CO.
279 Emmet St., Newark, N. J.
Phone: Bigelow 2-6600

. . . New Products



Portable Rotary Drill For Soils, Rock, Concrete

The Minuteman portable drill is a rotary unit designed for drilling in soils, rock and concrete.

The maker says the drill can handle continuous-flight augers from 3 in. to 12 in. in diameter and can drive 6-in.-dia augers down to depths ranging to 30 ft.

When equipped for core drilling, it can drive core barrels to 200 ft. When equipped for masonry drilling, the Minuteman cuts 1-in. to 8-in.-dia test cores from reinforced concrete.

The unit weighs 170 lb. It has a 6-hp engine, eight-speed automotive transmission, and a diaphragm-type carburetor that is designed to permit drilling at any angle.

The Minuteman also features a 44-in. stroke with power or hand feed both in and out of the hole, wheel-mounted base, and two point anchoring. MOBILE DRILLING, INC., 960 N. PENNSYLVANIA ST., INDIANAPOLIS 4, IND.

Bit for Drilling Concrete Cuts Work Time in Half

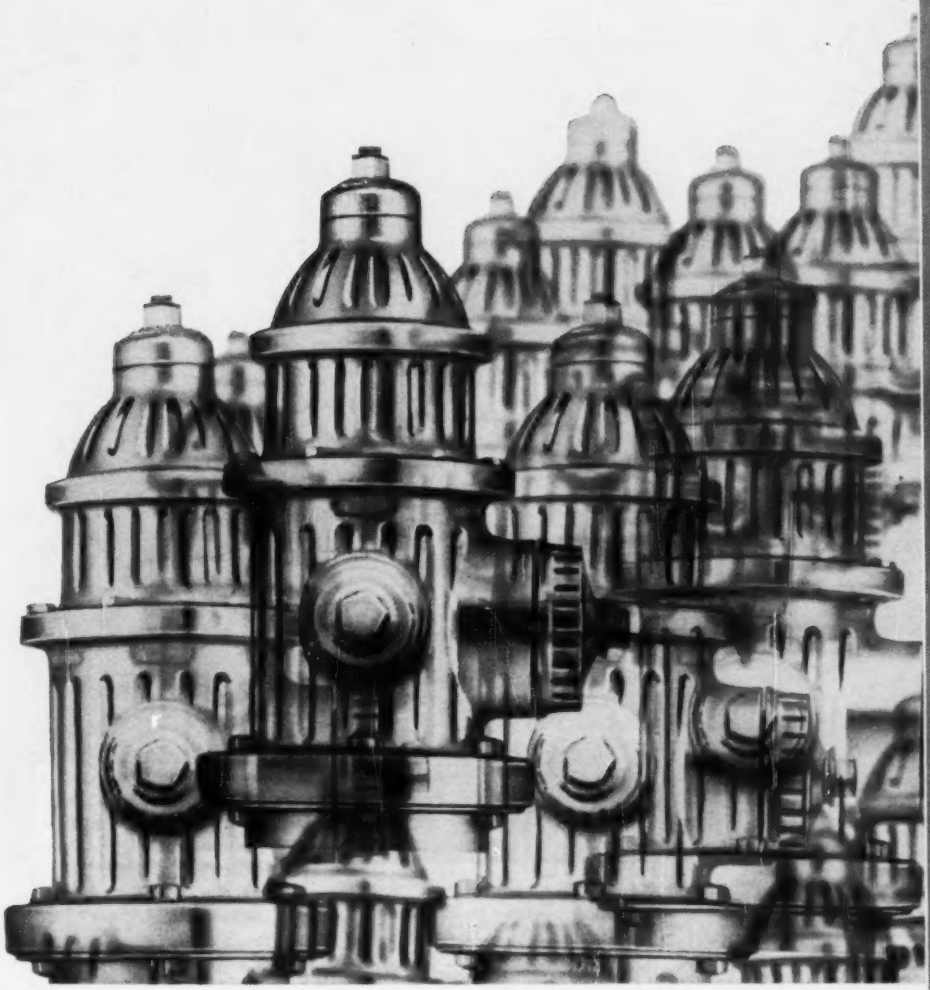
The WYR-LOK Carbide-Tipped core-bit cutting head can drill through reinforced concrete 2½ times as fast as a diamond core bit, according to the manufacturer.

The WYR-LOK bits are available in sizes starting at 2 in. dia. The workman can easily remove the cutting head, which can be used with barrel adapters of varying length to suit the depth of the hole required.

Easy removal also facilitates sharpening, which enables the workman to attain maximum drilling speed. NEW ENGLAND CARBIDE TOOL CO., INC. MEDFORD MASS.

OVER A MILLION REASONS

WHY YOU SHOULD SPECIFY R. D. WOOD HYDRANTS AND VALVES



Reasons? Over a million hydrants now in service throughout the world. A number like that speaks for itself, says plenty about the outstanding features of the hydrant and the excellent service and reliability you can expect with R. D. Wood products.

Conform to A.W.W.A. specifications

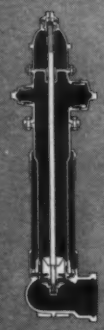
R. D. WOOD COMPANY

Public Ledger Bldg., Independence Square, Philadelphia 6, Pa.

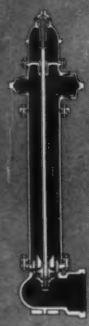
Established in 1803

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

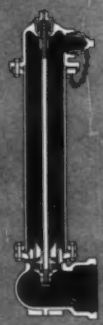
THIS IS THE R. D. WOOD LINE



R. D. Wood Mathews Modernized Hydrant with replaceable barrel.

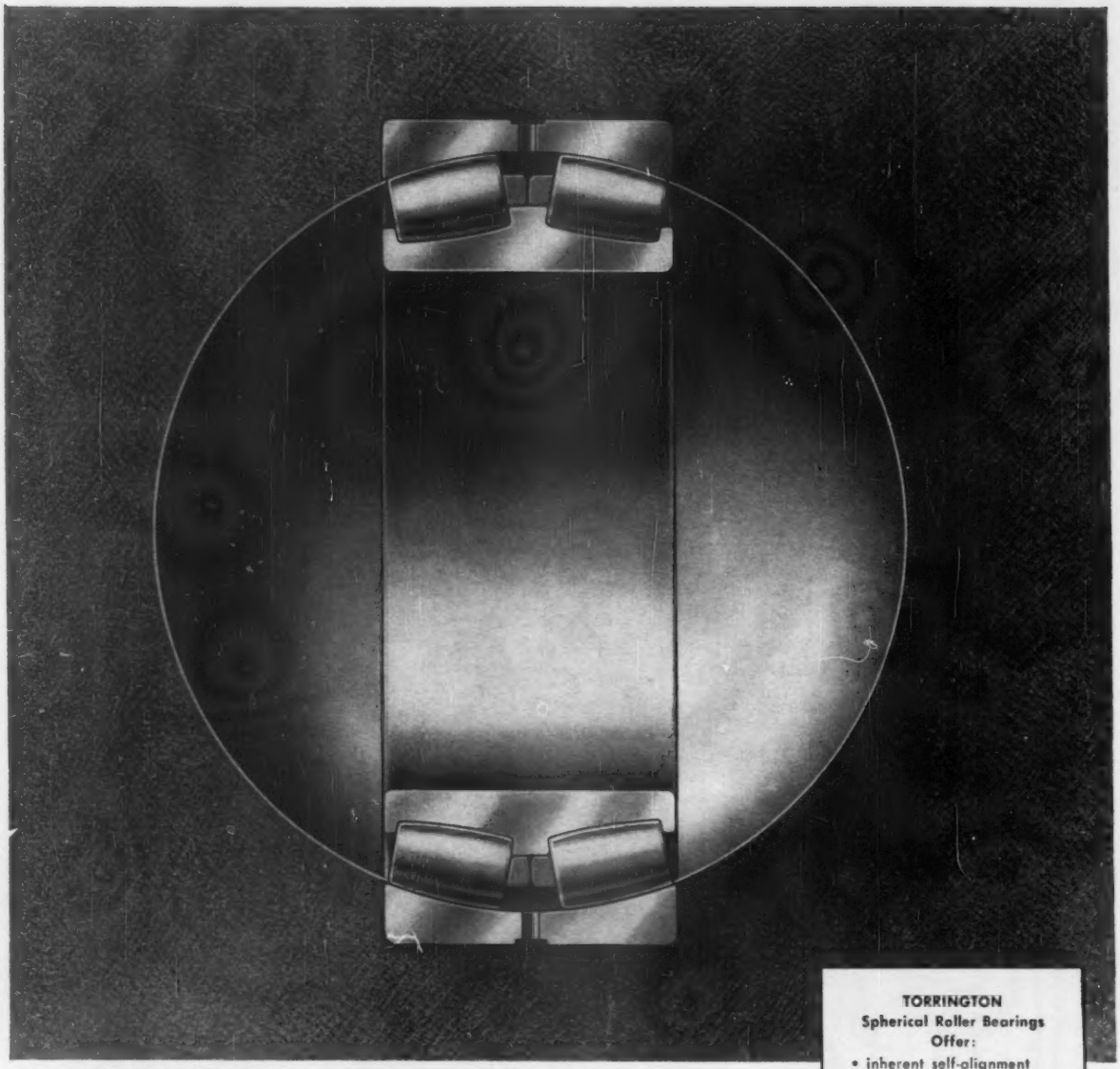


R. D. Wood Mathews Flange Barrel Hydrant . . . dry head construction keeps it operating in every kind of weather.



R. D. Wood Swivel Joint Hydrant can be faced in any direction.

R. D. Wood Gate Valve—bury it and forget it.



IN TORRINGTON SPHERICALS . . . NO COMPROMISE WITH QUALITY

The spherical design concept of Torrington Spherical Roller Bearings means superior performance and outstanding service life under the toughest operating conditions. It means inherent self-alignment, high radial and thrust load capacity, low friction. It allows compensation *within* the bearing for both dynamic and static misalignment.

Roller guidance is positive and accurate . . . is assured by grinding roller ends and center guide flange surfaces to a common spherical radius. Results are truer rolling motion, minimum friction and higher degree of geometric stability. Bearing operation is cooler, quieter, smoother.

If you're looking for outstanding bearing performance and bearing *value*, you should specify Torrington Spherical Roller Bearings. Backed by Torrington's uncompromising experience in engineering and manufacturing every basic type of anti-friction bearing, their quality is unmatched.

TORRINGTON
Spherical Roller Bearings
Offer:

- inherent self-alignment
- conformity of rollers to raceways
- integral center guide flange for stability
- positive roller guidance
- land-riding bronze cages
- maximum radial and thrust capacity
- controlled internal clearance
- electronically selected rollers
- even load distribution
- long, dependable service life

send for new Torrington Spherical Roller Bearing Catalog #258

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.

Record steel arch priced for . . .

Niagara River Bridge

This $7 million international bridge will be the world's longest hingeless steel arch. Spanning the Niagara River between Lewiston, N. Y., and Queenston, Ont., its 1,000-ft rib arch span will be 50-ft longer than the Niagara's Rainbow Bridge arch (ENR 10/30/41). Hardesty & Hanover, New York consulting engineers, designed the bridge for the Niagara Bridge Commission.

Financed by the sale of bonds, the completed project will link the New York Thruway with Queen Elizabeth Way and cost the Bridge Commission about $10 million. The three contracts let on October 4 total $6,944,943 and account for only 70% of the estimated cost of the over-all job. Approaches and terminals on both sides of the river to house customs and immigration facilities will be awarded in future contracts.

The Canadian substructure went at $286,620 to the Ontario firm of Steed & Evans, Ltd. on a low bid 17% under the second low of Aiken & MacLachlan, Ltd., St. Catherines, Ont. The United States substructure will be built by Bates & Rogers Const. Corp., Chicago, for $673,402, 29% below the second low placed by Johnson, Drake & Piper, Inc., Buffalo.

The superstructure contract to Bethlehem Steel at $5,584,921 is only $455,074 under the United States Steel bid. This will be something of a repeat performance for Bethlehem Steel who completed the Rainbow Bridge superstructure in 1941.

The 1,000-ft span of the Lewiston-Queenston hingeless steel arch will be riveted construction with a rise of 159-ft, 9-ft more than Rainbow's. The arch will have two box-girder ribs, measuring 13-ft 6 in. deep and 3-ft wide, spaced 61-ft c-c. The arch abuts on steel grillages encased in concrete skewbacks founded in bedrock 150-ft above the river.

From the arch ribs, unbraced steel columns support the deck which is 370 feet above the Niagara. It carries two 24-ft roadways surfaced with asphaltic concrete and separated by a 4-ft median. There will be an 8-ft walk on one side.

Starting at a concrete abutment on the top of the escarpment on the Canadian side, the river crossing will consist of two steel box-girder spans totaling about 270-ft in length, followed by the 1,000-ft steel arch and three more steel box-girder spans totaling about 330-ft to a concrete abutment at the top of the U. S. escarpment.

Wage rates include: common labor, $3.20/hr; carpenter, $3.925; structural and reinforcing ironworker, $4.125.

The bidding included:

Canadian Substructure

1C Steed & Evans, Ltd., Maple, Ont. $286,620
2 Aiken & MacLachlan, Ltd., St. Catherines, Ont. 335,450
10 The Carter Const. Co., Ltd., Toronto, Ont. 561,974
EE Hardesty & Hanover, New York, N. Y. 431,736

Bids: 10-4-60 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$8,000	$10,000
Exc, inc l, approach pier & abutment	cy	1,000	2.00	3.00
arhhabutment	cy	9,000	4.50	10.50
Conc, str, arch abutment, tocings	cy	3,500	27.00	20.00
shafts	cy	1,250	36.00	39.00
aopraoh pier & abutment, footings	cy	320	24.00	20.00
shafts & walls	cy	550	44.00	40.00
approach slab, parapets & mall on approach abutment	cy	115	44.00	30.00
Reinf bar for str	lb	224,000	0.09	0.12
Steel, 12 BP 53, H-piles	lf	380	9.50	9.00
Ab, set, beams, jack; f & set other embedded devices	ls	job	4,000	10,000
Riprap, dry	cy	450	12.00	20.00
Anchors, rock	ea	42	60.00	100.00
Gvl, bagged screened	cy	95	6.00	10.00
VCP, perf, underdrain	lf	165	3.00	3.00
Wp, bit, approach abutment	gal	110	6.00	6.00
Bf, selected, arch abutment	cy	320	3.50	4.00
approach abutment	cy	6,100	2.80	3.00
Fill, gvl, bank	cy	155	3.00	3.00
Electrical work	ls	job	1,200	500.00
Boring, rock	lf	200	8.00	3.00
other than rock	lf	200	4.00	3.00

Completion date: 5/31/61
Liquidated damages: $500 per day

United States Substructure

1C Bates & Rogers Const. Corp., Chicago, Ill. $673,402
2 Johnson, Drake & Piper, Inc., Buffalo, N. Y. . . . 870,487
4 Merritt-Chapman & Scott Corp., New York, N. Y. 944,480
EE Hardesty & Hanover, New York, N. Y. 813,162

Bids: 10-4-60 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$2,800	$7,500
Exc, uncl, arch abutment	cy	8,600	10.40	20.00
approach pier & abutment & relocated RR cut	cy	4,400	3.00	12.00
Conc, str, arch abutment, footings	cy	4,360	31.00	45.00
shafts	cy	1,250	43.00	45.00
approach pier & abutment, footings	cy	455	32.00	45.00
shafts & walls	cy	630	62.00	60.00
approach slab, parapets & mall on approach abutment	cy	110	64.00	50.00
Reinf bar for str	lb	258,000	0.16	0.12
Steel, 12 BP 53, H-piles	lf	390	8.00	8.60
Ab, set, beams, jack; f & set other embedded devices	ls	job	10,000	9,000
Riprap, dry	cy	298	19.00	16.00
Anchors, rock	ea	84	85.00	7.00
Gvl, bagged screened	cy	120	16.00	18.00
VCP, perf, underdrain	lf	190	3.00	1.50
Wp, bit, approach abutment	gal	135	2.00	1.50
Bf, selected, arch abutment	cy	1,100	7.50	4.00
approach abutment	cy	9,000	3.50	4.00
Fill, gvl, bank	cy	185	10.00	6.00
Wall, retaining, bin tp	sf	5,150	6.00	7.30
Steel beam guardrail	lf	400	3.00	3.00
Surf, crushed rock, relocated haul road	cy	3,300	4.00	8.00
RCP, culvert 15"	lf	320	10.00	6.00
CIP 10"	lf	50	17.00	12.00
Masonry, rubble stone	cy	80	75.00	190.00
Exc, for relocated upper haul road	cy	25,000	4.50	4.50
Embankment & bf for relocated upper haul road	cy	8,400	2.50	1.50
Electrical work	ls	job	500.00	2,000
Boring, rock	lf	200	7.50	7.80
other than rock	lf	200	7.50	7.80

Completion date: 5/31/61
Liquidated damages: $500 per day

Superstructure

1C Bethlehem Steel Co., Bethlehem, Pa. $5,584,921
2 American Bridge Division, United States Steel Corp., Cleveland, Ohio 6,039,995
3 Philip Zweig & Sons, Inc., Chicago Heights Steel Co., Ronnymede Steel Const., Ltd., Toronto, Ont. 8,432,600
EE Hardesty & Hanover, New York, N. Y. 6,738,053

Bids: 10-4-60 Items	Unit	Quantity	Unit Prices 1C	2
Conc, str	cy	2,400	$113.70	$115.00
Reinf bar, str	lb	470,000	0.119	0.15
Steel, carbon, str				
arch span, floor sys	lb	3,750,000	0.2745	0.274
spandrel col	lb	1,520,000	0.291	0.295
rib bracing	lb	1,033,000	0.265	0.283
towers	lb	1,520,000	0.29	0.315
Canadian approach	lb	660,000	0.297	0.30
U. S. approach	lb	880,000	0.296	0.295
Steel, high-strength, str				
arch span, spandrel col	lb	100,000	0.319	0.32
arch ribs	lb	7,010,000	0.311	0.363
Canadian approach	lb	480,000	0.31	0.298
U. S. approach	lb	350,000	0.292	0.30
Aluminum railing				
sidewalk	lf	1,710	14.35	15.00
parapet	lf	3,330	15.15	16.00
Asph conc wearing surf	sy	8,420	2.40	2.75
Lighting bridge	ls	job	53,000	60,000

Completion date: 5/29/62
Liquidated damages: $500 per day

Low Pipe Prices Win Montana Contract

By under bidding its six competitors from $2 to $57 per lin ft on 108-in. twin structural plate pipe culvert, Zook Bros. Construction Co. of Great Falls, Mont., took this $184,247 contract for a 2.1 mile Forest highway relocation in Columbia Falls, Glacier National Park. It will be built for the Bureau of Public Roads, Helena, Mont.

Wage rates include skilled labor, $2.67-$3.10/hr; common, $2.54-$2.90.

The bidding included:

1C Zook Bros. Constr. Co., Great Falls, Mont. $184,247
2 S. Birch, Inc. & S. Birch & Sons Constr. Co., Great Falls, Mont. 224,942
7 Hilde Constr. Co., Great Falls, Mont. 301,735
EE Government estimate 217,853

Bids: 7-21-60 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	acre	31	$500.00	$800.00
pit	acre	1	350.00	700.00
Trees & snags, selective removal	sf	100	5.00	2.00
Exc, unclassified	cy	151,000	0.24	0.27
borrow, rock	cy	1,500	3.00	1.50
Pits, strip borrow	cy	300	0.20	0.40
Ditches, furrow	lf	2,850	0.10	0.40
Exc, for structures	cy	1,000	1.50	3.00
Overhaul A	stay	900,000	0.01	0.01
B	yml	30,000	0.16	0.20
of borrow	yml	1,700	0.20	0.20
Water	unit	4,500	1.25	1.80
plant or plants[a]	ls	job	1,000	800.00
Rolling, pneumatic tired	hrs	1,000	8.00	8.00
Gravel base, grading	t	38,000	0.75	0.99
Mat, blotter, bit preservative treatment	t	525	3.50	5.00
Asph, bit preservative				
treatment gr MC-2	t	56	45.00	40.00
gr MC-5	t	50	45.00	44.00
Conc, cl A	cy	22	120.00	100.00
Steel, reinforcement	lf	1,150	0.20	0.30
CMP bit coated 24"	lf	686	9.00	10.00
Pipe, str-plate, 108"◊				
gage 1	lf	280	103.00	132.00
8	lf	128	90.00	110.00
8	lf	64	75.00	94.00
10	lf	32	68.00	84.00
12	lf	72	65.00	74.00
Culv pipe, salvaged, remove clean, re-lay	lf	60	3.50	6.00
CMP perf underdrain 8"	lf	100	3.50	4.00

a provide and maintain

MACK LVX DUMPERS RIPRAP A RISING RIVER. When complete, Washington State's Rocky Reach Dam will raise a pool in the Columbia River that would have periled the track foundations of the Great Northern Railroad. To prevent this, Goodfellow Bros., Inc., of Wenatchee is using 15 big LVX Mack dumpers to move over a million tons of rock for riprapping and reinforcement of the roadbed.

Mighty Muscles

CAISSON ROLLING—THE MACK WAY. Heavy equipment and material for the dam was handled easily and efficiently by this big tractor-drawn flatbed operated by Rocky Reach Contractors. The 64-ton floating caisson section is being moved into position by a Mack B-73 tractor.

Photo credit to Stone & Webster Engineering Corporation, Rocky Reach project engineers.

MACK
for over 8 straight years
NO. 1
by far in sales of
diesel trucks

at Rocky Reach

In the harnessing of a big river, trucks supply the big moving muscles, and the Rocky Reach Hydro-Electric Project being built by Chelan County Public Utility District on the Columbia River at Wenatchee, Wash., is made to order for brawny Macks. Handling the heaviest jobs known to big-league construction, they have hauled everything from riprap to caissons. And everywhere they've worked, they've set the pace for reliability, stamina and economy of operation.

Dumpers, concrete mixers, tractors, flat-bed trucks —there are dependable, economical Macks for every construction job . . . right up to the biggest. Moreover, when you standardize on Macks, you gain the added savings of a completely integrated parts and upkeep operation. Mack controls the quality of every Mack part because it makes more of its own major components—engines, clutches, brakes, transmissions, bogies, cabs, etc.—than any other maker. And every Mack is "Built like a Mack"... made to outlast, outwork, outearn anything else on demanding jobs.

Why not join the swing to Macks—the swing that means maximum hauling efficiency at minimum unit costs. Contact your Mack branch or distributor for full details and specifications. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7880

MACK FIRST NAME FOR **TRUCKS**

When temperatures drop, anti-freeze-protection time is greatly reduced when Columbia Calcium Chloride is in the mix.

COLUMBIA CALCIUM CHLORIDE helps deliver concrete design strength when temperatures drop

Design strength of concrete is normally based on curing at 70°F. When the temperature drops below 70°F, there is a definite lag in strength gain. Columbia Calcium Chloride added to the mix increases the rate of heat development, releases it earlier. As a result, you get these time-and-profit saving benefits:

Higher Early Strengths—At 40°F, you get 3-day strength in 1 day, 5-6 day strength in 2 days. There's no cold weather lag in strength gain; your job stays on schedule.

Faster Initial Set—Under normal conditions, Columbia Calcium Chloride cuts initial set time from 3 hours to 1 hour. At lower temperatures, the effects are even more pronounced. You get finishers on and off the job faster, avoid costly overtime.

Early Form Removal—Rapid strength gain permits removal and re-use of forms in about half the normal time.

Regardless of the temperature, adding Columbia Calcium Chloride to the mix gives your concrete characteristics which are closer to their laboratory design. You get better concrete, save time and money.

Get all these built-in, cold weather benefits for your concrete jobs. Specify Columbia Calcium Chloride. For more information, contact our nearest District Sales Office or write our Pittsburgh Address.

columbia | southern chemicals

CHEMICAL DIVISION

PITTSBURGH PLATE GLASS COMPANY

ONE GATEWAY CENTER PITTSBURGH 22, PENNSYLVANIA

DISTRICT OFFICES: Boston · Charlotte · Chicago · Cincinnati · Cleveland Dallas · Houston · Minneapolis · New Orleans · New York · Philadelphia Pittsburgh · San Francisco · St. Louis · IN CANADA: Standard Chemical Limited

Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta....n†	$ 90.00	$ 90.00	$ 85.00	$ 90.00	$ 90.00	$ 95.00	$125.00	.....	.....
Baltimore....o	95.00	95.00	101.50	98.00	105.00	105.00	124.00	.....	.....
	116.00g	*120.00g*	*125.00g*	*125.00g*	*125.00g*	*125.00g*	*148.00g*	*$180.00*	*$170.00*
Birmingham....n†r	85.00	87.00	84.00	86.00	91.00	97.00	116.00	.....	.....
	80.00	*80.00*	*83.00*	*81.00*	*81.00*	*98.00*	*88.00*	*85.00*	*93.00*
Boston....ns	108.00f	109.00f	111.00f	111.00	111.00f	127.00a	.....	.....	.....
	112.00	*112.00*	*120.00*	*120.00*	*120.00*	*130.00*	*156.00*	*158.00*	*176.00*
Chicago....**	112.00	115.00	109.00	123.00	131.00	132.00	127.00	.....	.....
	116.00	*116.00*	*129.00*	*127.00*	*127.00*	*128.00*	*136.00*	*136.00*	*136.00*
Cincinnati....n*	96.00	96.75	91.75	92.00	97.50	105.00	112.50	.....	.....
	100.25	*103.50*	*101.00*	*103.75*	*106.00*	*110.75*	*135.50*	*135.50*	*135.50*
Cleveland....o**	98.00	100.00	102.00	98.00	102.00	110.00	.....	.....	.....
	.....	.....	*118.00*	*110.00*	*115.00*	*118.00*	*145.00*	*145.00*	*145.00*
Dallas....‡	95.00k	99.00k	103.00k	103.00k	103.00k	108.00k	135.00	.....	.....
Denver....n*	*Not in stock*		*118.00*	*118.00*	*118.00*	*130.00*	*177.00*	*197.00*	*197.00*
Detroit....‡	140.00	142.50	142.00	138.00	145.00	145.00	.....	.....	.....
	152.25	*152.25*	*143.25*	*141.50*	*150.00*	*155.50*	*194.00*	*211.00*	*211.00*
Kansas City....tn	120.00	120.00	120.00	125.00	128.00	150.00	.....	.....	.....
	120.00	*120.00*	*120.00*	*125.00*	*128.00*	*132.00*	*165.00*	*225.00*	*225.00*
Los Angeles....znu	*91.00*	*91.00*	*91.00*	*91.00*	*91.00*	*91.00*	*150.00*	*140.00*	*140.00*
Minneapolis....os	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*
Montreal....*bp	83.00a	89.00a	83.00a	83.00a	99.00a	125.00a	.....	.....	.....
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*168.00*	*170.00*	*170.00*
New Orleans....tn	89.00	89.00	90.00	95.00	95.00	98.00	126.00	.....	.....
	99.00	*99.00*	*98.00*	*101.00*	*101.00*	*101.50*	*117.50*	*111.00*	*111.00*
New York.....	115.00	117.50	125.00	125.00	125.00	127.00	225.00aa	.....	.....
	.....	.....	*122.00*	*125.00*	*125.00*	*127.00*	*169.00*	*169.00*	*169.00*
Philadelphia....nt	105.00	105.00	95.00	105.00	125.00	110.00	125.00	.....	.....
	.....	.....	*117.00*	*120.00*	*120.00*	*125.00*	*142.50*	*145.00*	.....
Pittsburgh....st	135.00	135.00	135.00	135.00	140.00	140.00	165.00	.....	.....
	155.00	*115.00*	*145.00*	*150.00*	*150.00*	*150.00*	*225.00*	*225.00*	*225.00*
St. Louis....2ln	111.00	113.00	121.00d	121.00d	121.00e	120.00e	.....	.....	.....
	.....	.....	*129.00*	*129.00e*	*129.00e*	*129.00e*	*183.00e*	*183.00e*	*183.00*
San Francisco..nx	*68.00*	*68.00*	*81.00*	*81.00*	*81.00*	*81.00*	*90.00*	*111.00*	*112.00*
Seattle....n†	*54.00*	*57.00*	*67.00*	*67.00*	*67.00*	*68.00*	*81.50*	*86.50*	*86.50*
Toronto....*	84.00a	88.00a	82.00a	82.00a	87.00	86.00a	98.00a	.....	.....
	89.00	*92.00*	*100.00*	*100.00*	*103.00*	*104.00*	*118.00*	.....	.....

	LONG LEAF Y. P.	FIR PLYWOOD	
	Merchantable grade up to 20 ft.	⅜" Interior plyscored	¾" Plyform
	2x12 Rgh / 12x12 Rgh	C-D gr.	grade*
Atlanta....n†	$135.00 / $155.00	$125.00	$270.00
Baltimore....o	175.00 / 190.00	175.00	255.00
Birmingham....n†r	120.00 / 173.00	120.30	204.50
Boston....ns	..... /	165.00c	290.00c
Chicago....**	155.00 / 155.00	147.00	239.00
Cincinnati....n*	129.25 / 115.50	89.00f	165.00f
Cleveland....o**	..... /	118.85a	202.15
Dallas....‡	138.00 / 160.00	112.50ac	195.00ac
Denver....n*	..... /	146.50a	233.00a
Detroit....‡	163.50 /	120.00gca	209.00gca
Kansas City....tn	..... /	135.00a	215.00a
Los Angeles....znu	..... /	120.00	210.00
Minneapolis....os	..... /	195.00	305.00
Montreal....*bp	120.00 / 120.00	119.25	225.95
New Orleans....tn	160.00 / 155.00	119.00	200.71
New York.....	250.00z / 250.00z	113.20	194.10
Philadelphia....nt	..... /	130.00ka	212.00ka
Pittsburgh....st	145.00 / 185.00	225.00a	295.00a
St. Louis....2ln	..... /	144.00ach	244.00ach
San Francisco..nx	..... /	85-87.00k	155-158j
Seattle....n†	..... /	105.00aeg	190.00aeg
Toronto....*	86.00a /	216.00	216.00

† F. o. b. mill. * F. o. b. city, CL, out of yard. ** F. o. b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics Douglas Fir. *a Spruce. *b Federal tax exempt, add 6% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Add 2% sales tax. *n Less 2% disc. 10 days. *o Less 2% disc. 10th. *p Less 1% disc. 10 days. *q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. *r For f.o.b. city price add $8 for pine, $38 for fir eff. 1/1/58. *s asd trucklots. *t trucklots del. *u Retail LCL yard. *v Retail LCL, del. *w add 6% mun. & Prov. tax. *x add 4% sales tax. *z Hondouras Pine. *aa Domestic long leaf

* **PLYWOOD** (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carloads lots, delivered per 1000 sq. ft. surface. Seattle base price, Exterior, waterproof, ⅝", $139.00: ¾", $158.50. *a Delivered. *c Truck lots. *d A-C exterior. *e LCL. *f less 1%, 5 days. *g less 2% for cash. *h less 2% disc, 10 days *i add 2% sales tax. *j f .o.b. mill

GLASS, EXPLOSIVES, CHEMICALS, PILES, TIES

WINDOW GLASS

Discounts from jobber's list, Feb. 1, 1950a

	Single or Double Strength A quality	B quality
Atlanta	78%	80%d
Baltimore	74%b	74%b
Birmingham	82%c	82%c
Boston	72+10%eg	72+10%eg
Chicago	72%	72%
Cincinnati	74%	74%
Cleveland	74-2-10%	74-2-10%
Dallas	76%	76%
Denver	73.5%	73.5%
Detroit	72-10-10%	72-10-10%
Kansas City	76-10-10%	76-10-10%
Los Angeles	$12.88/17.32	$10.45/14.13
Minneapolis	71-10%	71-10%
Montreal	40-10-5%a	40-10-5%a
New Orleans	76%d	76%d
New York	79%	79%
Philadelphia	80%	80%
Pittsburgh	72%	73%
St. Louis	72-10-10%ef	72-10-10%ef
San Francisco	60%	73%
Seattle	$8.85/11.55di	$6.41/8.67di
Toronto	$6.49/9.57	$5.90/8.70

Glass: Jobber's list price per box of 50 sq. ft., 20 x 20 in. ss, $42.75 for A quality, $37.50 for B quality; 20 x 20 in., ds, $60.00 for A quality, $52.75 for B quality. *a sales tax extra. *b discount from 6/15/52 list. *c single strength: 83% for double strength. *d discount from 8/1/58 list. *e less 2%/10 days. *f add 2% sales tax. *g less 1%/cash. *h less 2%/cash. *i 20 boxes min.

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots

Atlanta	$0.2595
Baltimore	.2795
Birmingham	.2595
Boston	.2795
Chicago	.2795
Cincinnati	.2595
Cleveland	.2595
Dallas	.2870
Denver	.2795
Detroit	.2795
Kansas City	.2795
Los Angeles	.2795
Minneapolis	.2795
Montreal	23.20k
New Orleans	.2795
New York	.5130g
Philadelphia	.2795
Pittsburgh	.2595
St. Louis	.2795
San Francisco	.2795
Seattle	.2795
Toronto	.2795

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h F.o.b. Beloe il (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $24.30 in fiber cases: forcite 40%, $24.05; forcite 60%, $25.80.

40% Ammonia Gelatin price ranges in other than urban areas, per lb: (except Seismograph Grades)

	C/L 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

*All areas except those in Group 2 and N.J. cities of Bayonne, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan Robertson Leon Houston Angelina, Nacogdoches, Shelby and south thereof.

PILES

Prices per linear foot, fir and pine, rough peeled, f.a.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§	By Rail Fir
12" at butt	6-in.	30 to 39-ft.	$0.42a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.91	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.97	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	1.01	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	1.07	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	1.14	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	1.21	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.34	$1.40
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.41	1.40
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.54	1.45
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.67	1.54

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B
* a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:		8' x 8" x 8' Untr.	8' x 8" x 8' Tr.	7' x 8" x 8'6" Untr.	7' x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	2.85-3.00	4.00a-4.10	3.90	4.75-5.00
New York	Mixed Hardwood	3.45	5.10	4.30	6.50
	Mixed Oak	3.55	5.20	4.40	6.60
Philadelphia	Mixed Oak	3.80	3.97	4.37	4.57
St. Louis	Mixed Oak	2.65	3.50a	3.00ah	4.00-4.10ah
San Francisco	Douglas Fir	1.90ef	3.05ef	2.20ef	3.10ea

Tr.—Treated: Untr.—Untreated. aCreosoted. c Empty cell. e Green ff.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 8½, *i Mixed Hardwood

CHEMICALS

Water, sewage treatment, road work, carlots, f.o.b. works

Chlorine cylinders, liquid, per lb. freight allowed, N.Y. State	$ .11
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, ton	32.00
Silicate of soda, 52 deg., in drums, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags	2.05
Sulphate of copper in bags, 99% per 100 lb., reg., 25.2% copper content	13.00

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Dec. 22; Next, Jan. 26.
- Wage Rates, Building Board, Lath, Insulation: Last, Dec. 22; Next Feb. 2.
- Cement Aggregate, Ready-Mixed Concrete: Asphalt: Last, Jan. 5; Next, Feb. 9.
- Iron & Steel Products, Pipe: Last, Jan. 12; Next, Feb. 16.

Wheeling

CORRUGATED METAL CULVERT PIPE BY WHEELING

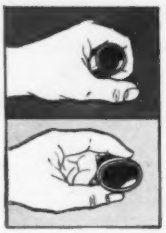
Problem: *Right-of-way must pass stream at 45° angle, instead of normal 90°. Situation further complicated because stream flows downhill at 8 mph.*

Outlasts the highway!

Tax dollars go further when you specify Wheeling Corrugated Metal Culvert Pipe for highway drainage. That's because Wheeling Culvert Pipe costs *less* to buy . . . *less* to install . . . and *less* to maintain! Here's why:

Can't disjoint—Wheeling Culvert Pipe comes in long lengths, so joints are few. What's more, they can't open because pipe has beam strength . . . and Wheeling Culvert Connecting Bands grip *both* pipe ends securely.

Flexible strength — Unlike rigid pipe, corrugated metal culvert pipe is flexible. So it easily absorbs shock and



extreme vibration caused by shifting fill and heavy trucks. Equally important, this flexibility enables Wheeling Culvert Pipe to "borrow" strength from surrounding fill (see for yourself — try this simple test with your garden hose).

Choice of end treatments—Special end treatments (including skews and bevels) can be quickly, economically supplied by your Wheeling Culvert Plant.

WHEELING CORRUGATING COMPANY

Warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis.*

Solution: *Wheeling Metal Culvert Pipe with skewed and beveled ends. This allows the pipe structure to be designed with the stream flow . . . permits the ends of the pipe to conform to the contour of the slope, thus improving efficiency and appearance.*

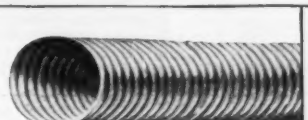
Get the full story on Wheeling Corrugated Metal Culvert Pipe and Fittings (both copper steel and copper-bearing pure iron) from your Wheeling man. Wheeling Corrugating Company, Wheeling, W. Va.

You always get fast delivery on Wheeling Culvert Pipe and Fittings because Wheeling maintains special culvert plants at Des Moines, Detroit, Kansas City, Louisville, Madison, Wis., Martins Ferry, Ohio, Minneapolis, Peoria, Philadelphia, St. Louis.

USE WHEELING CULVERT PIPE HERE, TOO!

Where headroom is limited, use special wide-based Wheeling Pipe Arch.

For efficient roadside drainage, use Wheeling Small Diameter Culvert Pipe.



For deep, fast-flowing streams, use Wheeling Large Diameter Culvert Pipe.

For deep, shifting fill, use Wheeling Large or Small Diameter Culvert Pipe.

IT'S WHEELING STEEL!

New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: *Atlanta. Houston.*

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲† **Mass., Chicopee Falls**—BA 1/31—Base Procurement Office, Westover Air Force Base, Chicopee Falls, Mass., 180 units Capehart HOUSING, Westover Air Force Base. IFB 19-617-61-25B. Extended Date. $2,800,000. Pedersen & Tilney, 8 Newbury St., Boston, Mass., archts. Congdon, Gurney & Towle, Inc., 53 State St., Boston, Mass., engr. CD 12/28.

▲ **Mass., Holyoke**—HOUSING—BA 2/2—City Housing Auth., Administration Bldg., Jackson Parkway, PHA Mass. 5-5&5-4, 150 housing units, three sites. Extended date. $1,600,000. William Hoskins Brown, 344 Boylston St., Boston, Mass., archt. CD 12/29.

BUILDINGS—LB & CA

▲† **Wexler Constr. Co.,** 118 Needham St., Newton Highlands, Mass., CA **$1,771,381,** E. M. barracks, consolidated mess and administration and storage bldgs. Fort Devens. ENG-19-016-61-22, AYER MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Nov. 22, awarded Jan. 3. CD 11/28, under LB.

▲† **E. J. Pinney Co., Inc.,** 220 Dwight St., Springfield, Mass., LB **$1,844,200** est. $1,850,000, (6 bidders), HIGH SCHOOL, Chapin St., Veterans Park Site, LUDLOW, MASS. Town, High School Bldg. Comm., Ludlow, Mass. William A. Boucher, 292 Worthington St., Springfield, Mass., engr. Bids Jan. 4. CD 12/20.

▲ **Par-Hill Holding Co., Inc.,** Great Plain, Danbury, Conn., Owner Builds, **$1,400,000,** 110,000 sq. ft. Berkshire SHOPPING CENTER, Rte. 6, Beaver Brook, DANBURY, CONN. CD 11/25/59.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **NEW JERSEY** — BA 1/26 — State Hy. Dpt., 1035 Parkway Ave., Trenton,
Bergen Co.—1,457 ft. long, 169 ft. wide and ten lanes overpass viaduct Rte. 95 from Grand Ave. westerly to about half-way between Railroad and Overpeck Creek (Bergen-Passaic Expressway), City of Englewood, Boro of Leonia, FP No. NJ I-95-7(11) 64. Plans deposit $15. CD 9/25/55, under Streets and Roads.

▲ **D. C., Wash.**—BA 2/2—D. C. Govt. Dpt. Hys., 499 Pennsylvania Ave. N.W., Southwest Freeway, 11th St. S.W., connection to 12th St. Expressway. Plans deposit $30. Gannett, Fleming, Corddry & Carpenter, 700 N. Front St., Harrisburg, Pa., engrs., CD 9/22.

BUILDINGS—BA

▲ **N. J., Trenton**—HOUSING FOR THE ELDERLY—BA 2/15—Trenton Housing Auth., 875 New Willow Ave., old age housing off Oakland St., NJ 5-9. $2,000,000. Kramer Hirsch & Carchidi, 115 W. State St., Trenton, N. J., archts. CD 6/24.

▲ **Pa., Smiths Ferry**—BA 2/16—Pa. Pub. Sch. Bldg. Authority, 101 S. 25th St., Harrisburg, high SCHOOL, Western Beaver County Union School Dist., Smiths Ferry, R.D. 1, $1,300,000. Plans deposit $50. B. J. McCandless, 239 4th St., Ellwood City, Pa., archt.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROADS,
N. Y.—L. G. DeFelice & Sons, Nettleton Ave., North Haven, Conn., CA **$2,378,114,** b. conc. Type 1A, 6.09 mi. HGS prestressed conc. beam 7 spans 352.6 mi. Interstate Rte. 502, Sections 7C-11 and 7C-12 (Moffitt Rd. to Stratton Rd.) Rte. 87, FISH 60-15, No. 1-87-4(10), Clinton Co.
N. Y.—John Arborio Inc., W. Cedar St., Poughkeepsie, N. Y., CA **$9,945,992,** 9 in. c. conc. pavt., 7.36 mi. access 1.85 mi. 3 br. rein.-con. boxes, 23.2 ft. 24.4 ft. skew spans, 1 br. comp. haunced grid and beams, 5 spans, 576 total, 6 brs. comp. beam, 3 spans, 165 total, Delaware Co.
N. Y.—Suburban Excavators, Inc., 4 New Salem St., Wakefield, Mass., CA **$3,227,186,** b. conc. 7.63 mi., 1.17 mi. bridge-rein.-con. box 20.8 ft. span bridges NYCRR prestress conc. beams, 3 spans 139.4 ft. total, Billings-Poughquash 8525 stonehouse-Stoneville SH 1162, F01025(3), Dutchess Co.
N. Y.—Collins Bros., Inc., 12 Tallmadge Pl., Mechanicville, N. Y., CA **$1,188,881,** 9 in. c. conc. pavt. 2.1 mi. precast conc. beam 1 sp. 31.8 ft. Mohawk River Turnpike Amsterdam Tribes Hills SH 108, City of Amsterdam East-West Art. Hy. Rte. 5, FAC 60-29, FARC 60-194, U 349(15), Montgomery Co.
N. Y.—Bero Constr. Corp., Box 70, Waterloo, N. Y., CA **$1,429,872,** b. conc. Type 1A-8 684 mi. comp. WF truss bridge 3 spans, 324 ft. total Palmyra-Marton SH 1714 Marion-Williamson, Pt. 1, SH 992, Rte. 21, r.c. 60-190, Wayne Co. Bids Dec. 9, awarded Jan. 6. Grand total $18,170,045. CD 12/12, under LB.

▲ **T & T Contrg. Corp.,** 4814 Glenwood Rd., Brooklyn 3, N. Y., CA **$1,130,812** Contr. 1, STORM WATER SEWER 82 Ave. from Little Neck Parkway to 260 St., 80 Ave. from 260 St. to 267 St.; 78 Ave. from 267 St. to 271 St.; Union Turnpike from 261 St. to 265 St., 271 St. to Hewlett St.; 260 St. from 82 Ave. to 80 Ave., 262 St. from 80 Ave. to Union Turnpike; 267 St. from 80 Ave. to 76 Ave.; 271 St. from 78 Ave. to Union Turnpike, etc., Third Ward, Queens Boro, NEW YORK. President Queens boro, Rm. 228, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids Nov. 29, awarded Jan. 10. CD 12/2, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROADS,
Tully & DiNapoli, Inc., 127-50 Northern Blvd., Flushing, N. Y., CA **$6,637,704,** c. conc. pavt. 0.18 mi., 3 HGS rigid frame 3 span 186.6 ft. total, 2 sps. 107.1 ft. total, 1 sp. 36.7 ft. total, 1 HGS comp. beam 1 sp. 170.2 ft., 1 HGS comp. beam, 4 sps. 267.8 ft. total, 1 sp. concrete slab 48 ft. 1 HGS pl. gird. 1 span 209 ft. Interstate Rte. Conn. 511 Cross Bronx Expressway-Cont. 2A, Major Deegan Expressway Interchange Undercliff Ave. to Plimpton Ave. Rte. 95, FICBE 60-5, Proj. Ei-95-1(47), Bronx Co. Bids Dec. 9, awarded Dec. 29. CD 12/21, under LB.

▲† **Drake Constr. Co., Ltd.,** 155 M-1485 Portage St., Winnipeg, Man., Canada and **C. A. Pitts General Contractor Ltd.,** Montreal Airport, Montreal, Que., Canada, CA **$1,124,283,** (CY-61) DEPENDENTS ELEMENTARY SCHOOL addn., all purpose room addn., penthouses, chapel, educ. wing, officers' quarters, etc., Goose Air Base, ENG-30-347-61-14, GOOSE BAY, LABRADOR. U. S. Eng., 346 Broadway, New York 13, N. Y., U.S.A. Bids Dec. 20, awarded Dec. 29. CD 12/27, under LB.

▲ **Johnson, Drake & Piper, Inc.,** 86 Trinity Pl., New York, N. Y., LB **$2,570,993,** Contr. 456, INTAKE WORKS of West Delaware Tunnel, Connsville, Tompkins, Delaware Co., NEW YORK, N. Y. Bd. Water Supply, 13 Fl., 120 Wall St., New York 5, N. Y. Bids Jan. 10. CD 12/19;
Rosoff Bros., Inc., 369 Lexington Ave., New York 17, N. Y. and **Foster-Newman Contg. Co.,** 3622 13 Ave., Brooklyn 18, N. Y., LB **$2,091,980,** Contr. 457, OUTLET WORKS West Delaware Tunnel, Grahamsville, Neversink, Sullivan Co. (New York, N. Y.).

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,
The Conduit & Foundation Corp., 158 N. 20 St., Phila., Pa., CA **$2,698,035,** fdns. and substructure 1,800 ft. 10-lane Interstate Rte. 80 bridge over Hackensack River, First Ave., Ridgefield Park, to Hudson St., Hackensack, Bergen Co. Bids Dec. 7, awarded Jan. 4. CD 12/9, under LB.

BUILDINGS—LB & CA

▲ **Pearce & Pearce,** 400 Main St., **Buffalo, N. Y.,** Owner Builds, Total Est. **$2,750,000 (Two Year Program)** First Year $2,000,000, 100 HOMES, Briarhurst South, AMHERST, N. Y. CD 1/27.

▲ **Juette Builders,** 20 Coronation Dr., **Amherst, N. Y.,** Owner Builds, Total Cost **$2,000,000,** First Year $900,000, 100 HOMES, Hartford Estates Addn., AMHERST, N. Y. CD 12/24/59.

▲ **Mahony-Troast Constr. Co.,** 790 Bloomfield Ave., Clifton, N. J., CA Est. **$1,000,000,** design and construct 1 story, 105,000 sq. ft. PACKAGING and DISTRIBUTION PLANT, CLIFTON, N. J. Lester-M. Entin Assoc., and Troast-Slettland Enterprises, Passaic, N. J. and Troast-Slettland Enterprises, Clifton, N. J.

▲ **Heyden-Newport Chemical Corp.,** 290 River Dr., Garfield, N. J., Owner Builds, FUMARIC ACID PLANT at site, GARFIELD, N. J.

▲ **Brown & Matthews, Inc.,** 404 Park Ave. S., New York, N. Y., CA 1 story, 135x400 ft. PLASTICS LABORATORY and OFFICE, Research and Engineering Center, MANVILLE, N. J. Johns-Manville Corp., 22 E. 40 St., New York 16, N. Y.

▲ **Bogert Constr. Co.,** 324 Railroad Ave., **Hackensack, N. J.,** LB Est. **$2,500,000,** SCHOOL, NEWARK, N. J. Sacred Heart School of Vailsburg, 1068 So. Orange Ave., Newark, N. J. Bids Nov. 23. CD 11/21.

▲ **Sanderson & Porter, Inc.,** 72 Wall St., New York, N. Y., CA Total cost **$43,000,000,** design and construct Mitchell Station GENERATING PLANT addn., COURTNEY, PA. West Penn Power Co., Cabin Hill, Greensburg, Pa. CD 11/1.

▲ **Longwood Gardens,** Kennett Square, Pa., rejected bids Nov. 4, RECEPTION CENTER, KENNETT SQUARE, PA. LB **$1,000,000.** Will re-advertise. CD 12/12, under LB.

▲ **John J. McDonnell, Inc.,** 69th and Market Sts., Upper Darby, Pa., CA **$2,594,000,** est. $3,057,528, 225 units HOUSING PROJECT, Mill Creek, PHILA., PA. Phila. Housing Authority, 42 S. 15th St., Phila., Pa. Louis J. Kohn, 20th and Walnut Sts., Phila., Pa., archt. Keast & Hood, 1201 Chestnut St., Phila., Pa., engr. CD 2/13/59.

▲† **George Hyman Constr. Co.,** 1010 Vermont Ave. N.W., Wash., D. C., CA **$7,748,000,** 6 story wing for MUSEUM of NATURAL HISTORY, Smithsonian Institution, WASH., D. C. General Services Admin., 7th and D Sts. S.W., Wash., D. C. Bids Dec. 6. CD 12/8, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Fla., Boynton Beach**—BA 3/1—City, City Hall, water TREATMENT PLANT, Distribution lines, 500,000 gal. elevated steel tank and deep wells, $1,500,000. Plans deposit $100. Russell and Axon, Municipal Airport, Daytona Beach, Fla., engrs. CD 1/5.

▲† **Tenn., Tullahoma**—BA 3/2—U. S. Eng., P. O. Box 1070, Nashville, PROPULSION ENGINE ALTITUDE TEST CELL, Arnold Engineering Development Center, Arnold Air Force Base, ENG-40-058-61-14, $8,00,000. Plans deposit $10. CD 1/11.

BUILDINGS—BA

▲ **N. C., Albermarle**—SCHOOL—BA 2/9—Stanly Co. Bd. Educ., County Office Bldg., 70,000 sq. ft. West High School, $1,000,000. Stinson, Arey & Hall, 639-A W. 5th St., Winston-Salem, archts. CD 11/22.

▲ **Tenn., Nashville**—WOMEN'S RESIDENCE—BA 2/16—Vanderbilt University, 21st Ave., S., 180,000 sq. ft., four women's residence, $2,000,000. Brush, Hutchinson & Gwinn, 1719 West End Building, archts. CD 12/8/59.

▲ **N. C. Albemarle**—BA 2/23—Stanly Co. Bd. Educ., County Office Bldg., 73,000 sq. ft. South Stanly HIGH SCHOOL, Norwood, $1,000,000. Plans deposit $50. J. Hwatt Hammond Assocs., 200 Worth St., Asheboro and Oden & Sloan, 101 W. Green St., High Point, archts. CD 11/22.

HEAVY CONSTRUCTION—LB & CA

▲† **Arthur Venneri Co.,** 300 North Ave., Westfield, N. J., LB **$1,747,000,** (14 bidders), Air Route TRAFFIC CONTROL BUILDING, LEESBURG, VA. Federal Aviation Agency, Region 1, New York International Airport, New York, N. Y. Bids Dec. 15. CD 12/5.

▲† **Electronic & Missile Facilities, Inc.,** 2 Lafayette St., New York 7, N. Y., CA **$1,712,346,** air route traffic control bldg. Inv. 2-61-90, NEW ORLEANS, LA. Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex. Bids Dec. 28. Awarded Dec. 29. CD 1/3 under LB.

BUILDINGS—LB & CA

▲ **Patterson & Fox,** Old Harding Rd., Nashville, Tenn., Owner builds $2,000,000, 100 RESIDENCES, NASHVILLE, TENN.

▲ **Swindell-Dressler Corp.,** Aspinwall St., Pittsburgh, Pa., CA Total est. **$2,000,000,** general contract brick

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

REFRACTORY PLANT, BESSEMER, ALA. H. K. Porter Co., Inc., 2800 Alabama Ave., Bessemer, Ala. CD 9/13, under CA.

▲ **Reggie Berkowitz,** 276 S. Orlando Ave., Winter Park, Fla., CA **$1,100,000,** 4 story Lake Virginia APARTMENT, Osceola and Ollie Aves., WINTER PARK, FLA. Owner, c/o Brolemen & Rapp, archts., 1216 E. Colonial Dr., Orlando, Fla. CD 5/4.

▲ **The Werner Co., Inc.,** Box 908, Shreveport, La., CA Est. **$2,250,000,** masonry SHOPPING CENTER, SHREVEPORT, LA. Shreve City, Inc., Commercial National Bank Bldg., Shreveport, La. Wm. B. Wierner, Morgan & O'Neal, Commercial National Bank Bldg., Shreveport, La., archts.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Cincinnati**—BA 2/1—City, City Hall, substructure low pressure pumping station, Kellogg Ave. Waterworks, $1,250,000. Plans deposit $50. Black & Veatch, Meadowlake Parkway, Kansas City, Mo., engrs. CD 4/25.

▲† **Missouri**—BA 2/16—U. S. Eng., 420 Locust St., St. Louis 2, 6,500 lin. ft. rein.-con. floodwall, 1 road closure with steel closure gates, etc. Proj. Item F-2, flood protection, St. Louis. CIVENG-23-065-61-50. $3,500,000. Sverdrup & Parcel, Inc., 915 Olive St., St. Louis 1, Mo., engr. CD 9/21.

▲ **Neb., Omaha**—BA 2/28—City, City Hall, construction of Mandan Park Sewage Treatment Plant, $10,700,000. Plans deposit $75. Henningson, Durham & Richardson, Inc., 2962 Harney St., engr. CD 11/15.

BUILDINGS—BA

▲ **O., Steubenville**—DORMITORIES—BA 2/1—College of Steubenville, mens dormitory, womens dormitory, dining hall, No. CH OHIO 97(d), over $1,000,000. Plans deposit $100. Joseph M. Bontempo, 115 Shields St., Rochester, Pa., archt. CD 10/17.

▲ **Tex., Galveston**—COUNTY JAIL—BA 2/6—Galveston County, Courthouse, 4 story, 57,000 sq. ft., rein.-con. frame, brick, county jail, $1,800,000. Plans deposit $75. R. R. Rapp, 417 Stewart Bldg., archt. Bernard Johnson & Associates, 4926 Travis St., Houston and Reesby & Associates, Steward Bldg., Galveston, engrs. CD 5/18.

▲ **O., Cincinnati**—BA 2/8—Bd. Educ., 608 McMillan St Eden JUNIOR HIGH SCHOOL, $1,208,340. Plans deposit $50. CD 1/4 under LB.

▲ **O., Cincinnati**—POST OFFICE—BA 3/1—U. S. Post Office Dpt. Pennsylvania Ave. between 12th and 13th Sts., NW, Wash., D. C., build and lease, 3-6 story, brick, rein.-con. Post Office Annex, incl. 300,000 sq. ft. postal operation, 34,000 ft. office, 30,000 sq. ft. garage, Liberty and Dalton Sts., $9,000,000. A. M. Kinney, Inc., 2912 Vernon Pl., archts. CD 12/2/59.

HEAVY CONSTRUCTION—LB & CA

▲ **S. A. Healy Co.,** Box 11, McCook, Ill. LB **$1,151,963,** Contracts 2, 3, 4 and 6 STORM SEWERS, St. Joe Creek and Montgomery Ave., DOWNERS GROVE, ILL. Village, Village Hall, Downers Grove, Ill. Stanley Engineering Co., Hershey Bldg., Muscatine, Iowa, engr. Bids Dec. 12. CD 11/10.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing 24, Bids opened 1/4,
Mich.—**A. Lindberg & Sons,** Box 134, Ishpeming, Mich., LB **$2,759,290,** 5.4 mi. US 23 Freeway from Milan north to Willis Rd. Incl. grade separations, Stony Creek and Willow roads and interchange at Willis Rd. and existing US 23 at Arkona Rd. north of Milan, Washtenaw Co.;
Mich.—**L. A. Davidson,** 213 E. St. Joseph St., Lansing, Mich., LB **$1,932,160,** 2.6 mi. I-96 bypass of Brighton, incl. interchanges at Spencer Rd. and existing US 16 about 2 mi. west of Brighton and grade separation at Flint Rd., Livingston Co.;
Mich.—**C. R. Hunt,** Cass City, Mich., LB **$384,367,** reconstr., grading, drainage structures and surf. 6 mi. M-65 south from Alcona-Alpena county line, Alcona Co.;
Mich.—**I. L. Whitehead,** 1107 W. Easterday Ave., Sault Ste. Marie, Mich., LB **$469,665,** reconstr., grading, drainage structures and surf. 7 mi. M-65 north from Alpena-Alcona county line, Alpena Co.;
Mich.—**Ann Arbor Constr. Co.,** 221 Felch St., Ann Arbor, Mich., LB **$131,820,** surf. 6 mi. M-72 between Luzerne and Mio, Oscoda Co. CD 12/22.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing 24, Bids opened 1/4,
Mich.—**L. A. Davidson,** 213 E. St. Joseph St., Lansing, Mich., LB **$1,985,527,** interchange at jct. of Interstate 96 and US 23 freeways just east of Brighton, Livingston Co.;
Mich.—**Canonie Constr. Co.,** South Haven, Mich., LB **$131,878,** 220 ft. bridge to carry Raymond Rd. over Kalamazoo River ¾ mi. east of Battle Creek, Calhoun Co. CD 12/29.

D'Agostini Constr. Co., 27283 Jean Ave., Warren, Mich., CA **$760,020** (11 bidders), Proj. W208, 89,000 lin. ft. 6 to 16 in. water lines, Plymouth Twp., DETROIT, MICH. Wayne County Rd. Comn., 726 City-County Bldg., Detroit 26, Mich. Garrity & Mosher, 14050 W. McNichols, Detroit, Mich., engrs. Awarded Dec. 29. CD 12/29.

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, ROADS,
O.—**W. L. Johnson Constr. Co. & Assocs.,** P. O. Box 6688, Bexley Sta., Columbus, O. CA **$2,141,598** Type T 71, structures 4.618 mi. US R 30-6.66, US Rte. 250-5.48 F-12(2) F 1072(2) Proj. 785, Wayne Co., CA **$1,977,247** Type T 71, structures 8.588 mi. US Rte. 21-11.48-0.00 (City of Massillon) Proj. 800, Stark and Wayne Counties.
O.—**Fischer Constr. Co.,** 10147 Springfield Pike, Cincinnati, O., CA **$1,805,028,** Type T 71, structure 2.609 mi. US Rte. 52-6.25, I 74-1(5)05, Proj. 782, Hamilton Co.; CA **$1,560,640,** Type T 71, structures 3.461 mi. US Rte. 40-0.00 (and US Rte. 35) I 70-1(8)00, Proj. 784, Preble Co.
O.—**Chapin & Chapin, Inc.,** and **Baker & Hickey Co.** 2170 Eakin Rd., Columbus, O., CA **$3,505,778,** Type T 61, structures 2.456 mi. US Rte. 30-33.86, U-UG 457(10) (City of East Liverpool) Proj. 778, Columbiana Co.
O.—**A. J. Baltes Inc.,** 11 Oliver St., Norwalk, O., CA **$2,570,640,** Type T 71, structures 4.83 mi. US Rte. 6-7.31, F-FG 1042(6) Proj. 779, Erie Co.
O.—**C. F. Replogle,** P. O. Box 308, Circleville, O., CA **$3,147,343,** Type T 71, structure 6.016 mi. US Rte. 21-10.94, I 77-2(3)47, Proj. 780, Guernsey Co.
O.—**Foley Constr. Co.,** 5050 Orchard St., Cincinnati, O. CA **$2,372,097,** Type T 71, structures 0.619 mi., US Rte. 50-20.81, I 71-1(17)00 (City of Cincinnati) Proj. 781, Hamilton Co.
O.—**Pierce Constr. Co.,** 3005 Bellevue Rd., Toledo, O., CA **$577,040,** Type T 35, 1.842 mi. US Rte. 24B-10.33 (City of Toledo) Proj. 793, Lucas Co. Bids Dec. 13. Grand Total $19,657,451. CD 1/6, under LB.
OHIO—State Hy. Dpt., State Depts. Bldg., Columbus 15, ROADS,
cancelled bids opened Dec. 13, Type T 71, structures 4.859 mi. US Rte. 52-7.90, U-F-393(10) City of Ironton) (Village of Coal Grove) Proj. 783,, Lawrence Co., LB **$5,163,477.** CD 1/6, under LB.

▲ **INDIANA**—State Hy. Dpt., State Office Bldg., Indianapolis, ROADS,
J. C. O'Connor & Sons, 2104 Miner St., Fort Wayne, Ind. CA **$1,135,020,** rein.-conc. pavement, Contract R 5176, Bids Dec. 20. CD 12/29, under LB.

▲ **OHIO**—Stae Hy. Dpt., State Depts. Bldg., Columbus,, Zone 15, Bids opened 12/15,
O.—**J. A. Jones Constr. Co., of Charlotte, N. C.,** P. O. Box 108, Berlin Heights, O., LB **$4,977,812,** est. $6,075,100, (5 bidders) Type T 71 and structures 5.863 mi., State Rte. 46-25.24, 27.06; State Rte. 531-(9.90-10.04) F 665(5) F-FG UG U 665(6) US 134B(2) (City of Ashtabula) Proj. 810, Ashtabula Co.;
O.—**Penker Constr. Co., Inc.,** 1030 Summer St., Cincinnati O., LB **$4,484,356,** est. $5,545,000, (10 bidders), Type T 71 and structures 0.704 mi. US Rte. 25-0.04, I 71-1(16)00 City of Cincinnati, Proj. 811, Hamilton Co.;

BUILDINGS—LB & CA

▲ **John G. Ruhlin Constr. Co.,** 1024 Home Ave., Akron, O. LB est. **$3,000,000,** (4 bidders) WAREHOUSE, parking facilities, AKRON, O. A. Polsky & Co., High & State Sts., Akron, O. Bids Dec. 14. CD 12/12.

▲ **Valley Forge Home Development,** 21565 Lorain Ave., Cleveland 26, O., Owner Builds, **$10,000,000, $500,000** first year (6 to 8 year program), 200 HOMES, south of Lorain Rd., FAIRVIEW PARK, O. CD 1/23/56.

▲ **Keyes-Treuhaft Co.,** 10514 Shaker Blvd., Cleveland 4, O., Owner Builds, **$2,000,000,** 60 HOME addn., Landerwood Estates, PEPPER PIKE, O. John Little 1900 F. 30th St. Maxwell Norcross 13125, Shaker Sq., and George Burrows, 16104 Chagrin Blvd., Cleveland, O., archts. CD 12/4/57.

▲ **Owner,** c/o Zehman-Wolfe & Sherman, 13484 Cedar Rd., Cleveland 18, O. Owner Builds, **$2,500,000,** 6 story BLAIR HOUSE APARTMENT, 19615 Van Aken Blvd., SHAKER HEIGHTS, O. CD 8/24.

▲ **Dav-Way Realty, Inc.,** 302 Arcadia Court, Fort Wayne, Ind., Owner builds **$1,250,000,** $600,000 first year, (2 to 3 year program) 76 DWELLINGS, 20 acres, near Bluffton Rd. between Dale Dr. and Maplewood Dr. FORT WAYNE, IND.

▲ **George A. Fuler Constr. Co.,** 111 W. Washington St., Chicago, Ill., CA **$6,000,000,** OFFICE, State and Adams Sts. CHICAGO, ILL. Home Federal Savings & Loan Assn. 200 S. State St., Chicago 4, Ill. CD 9/7.

▲ **M. A. Lombard & Sons Co.,** 1215 W. 103rd St., Chicago, Ill., CA **$1,309,309,** est. $2,000,000, 100 bed HOSPITAL addn., CHICAGO, ILL. St. Bernards Hospital, 6337 Harvard Ave., Chicago, Ill. Bids Dec. 20. CD 12/15.

▲ **S. N. Robbins Co.,** 4341 W. Peterson Ave., Chicago, Ill., CA **$1,500,000,** 5 story, 160 unit, rein.-conc. HOTEL, swimming pool, LINCOLNWOOD, ILL. Agent c/o Jack Pritzker & Marshall Bennett, 134 N. LaSalle St., Chicago 2, Ill. Friedman Alschuler & Sincere, 130 N. Franklin St. and Hausner & Macsai, 104 S Michigan Ave., Chicago 3, Ill., archts. CD 7/16/59.

▲ **Blount Bros. Constr. Co.,** 79 Commerce St., Montgomery, Ala., LB **$7,417,000** (9 bidders) maximum security PENITENTIARY, for Bureau of Prisons MARION, ILL. General Services Admin., 219 S. Clark St., Chicago, Ill. Bids Jan. 10. CD 11/15.

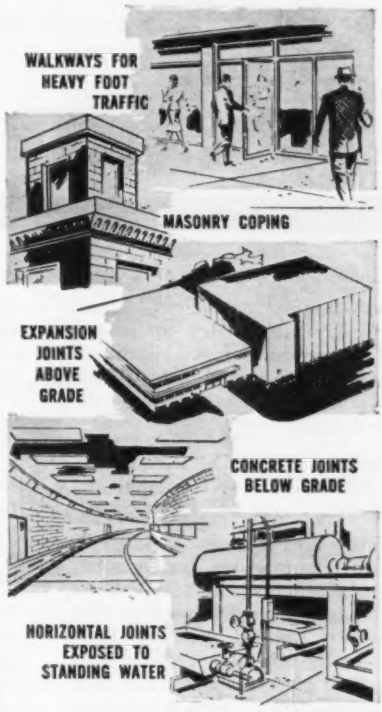
▲ **Northern Builders,** 4008 W. Addison St., Chicago, Ill. CA **$1,000,000,** 35,000 sq. ft. television mfg. FACTORY, Seeburg Industrial Park, WHEELING, ILL. Marshall Seeburg & Sons, 919 N. Michigan Ave., Chicago, 11, Ill. Muntz TB, lessee. CD 1/4.

For POSITIVE Sealing of Horizontal and Vertical Joints

Specify and Use

SERVICISED VERTISEAL®

- Maintains positive bond from below 0°F to 150°F
- No cold flow after cure
- Highly resilient—will not work harden
- Waterproof • Non-Shrinking • Weatherproof
- 3 Types: Pouring, Troweling or Gun Grade


WALKWAYS FOR HEAVY FOOT TRAFFIC
MASONRY COPING
EXPANSION JOINTS ABOVE GRADE
CONCRETE JOINTS BELOW GRADE
HORIZONTAL JOINTS EXPOSED TO STANDING WATER

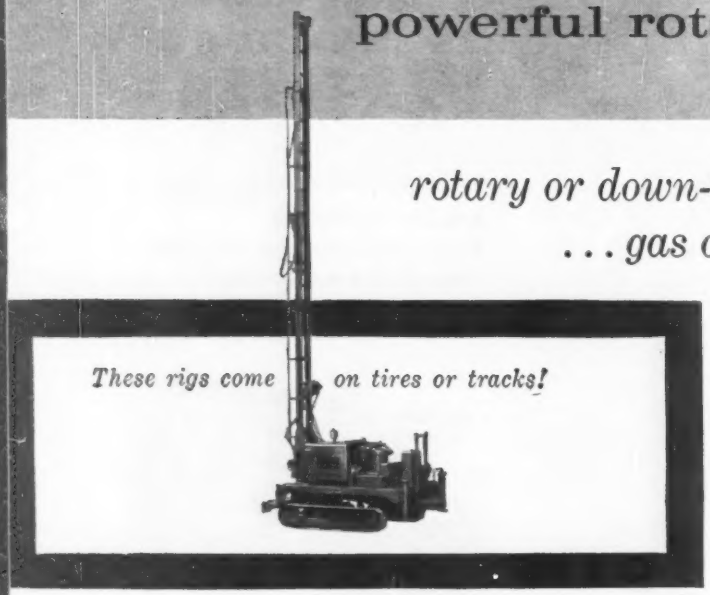
Servicised Vertiseal is a cold applied, general purpose self-curing joint sealer for positive sealing of horizontal or vertical joints. It is a two-component material manufactured with Thiokol* Polysulfide Liquid Polymers, and is available in widely used standard colors —Gray, Black, and Tan. In addition to its other qualities, Vertiseal is resistant to petroleum derivatives, most common acids, fats, and alkalis. Write for Technical Bulletin and Catalog.

Thiokol is a registered name of the Thiokol Chemical Corporation

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street Chicago 38, Illinois

LE ROI LRD-2 for low cost, powerful rotary drilling

rotary or down-the-hole drilling ... gas or diesel



Here's a highly portable blasthole drill for drilling holes up to 4½ inches as deep as 30 feet... equipped for either positive-drive rotary drilling or powerful down-the-hole percussive drilling.

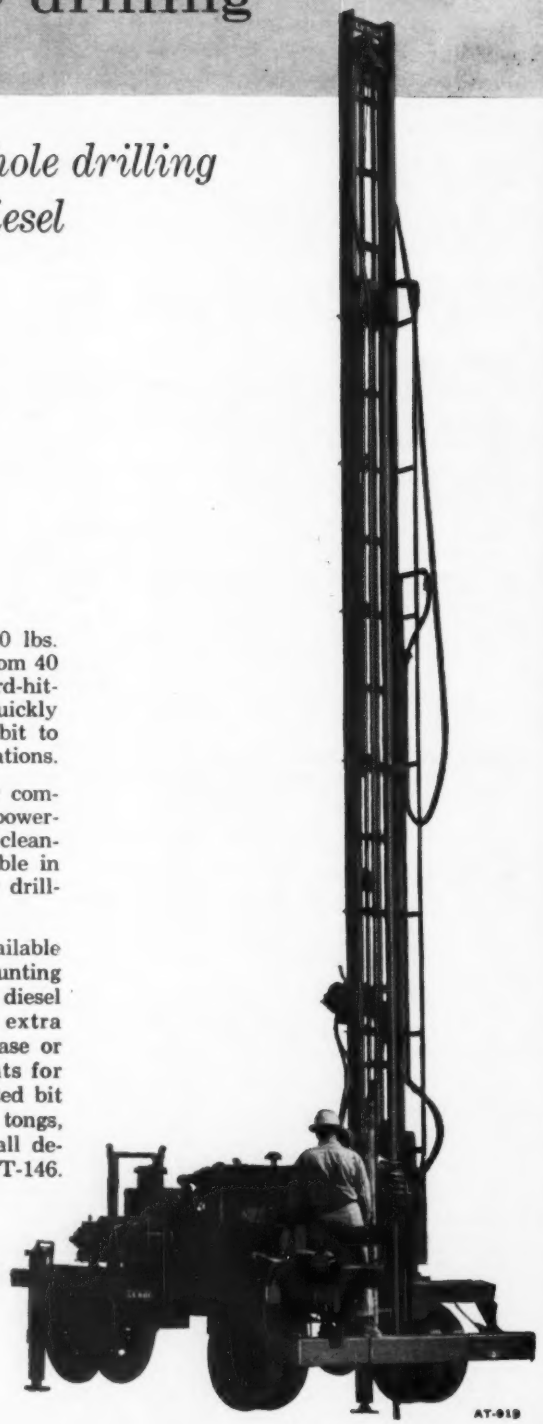
What's more, the LRD-2 is completely self-contained... and economically priced, too!

The entire unit is easily handled by one man. Controls are conveniently grouped at an operator's station located alongside the drilling area. The unit can be moved, leveling jacks hydraulically set, mast hydraulically raised, drill pipe and bits connected, and hole started all with a few non-fatiguing motions.

Powerful direct mechanical drive keeps the rotary table turning — won't bog down or lose torque under rough going like air or hydraulic driven units — eats through tough rock formations under 10,000 lbs. pulldown pressure at speeds from 40 to 250 rpm. If necessary, a hard-hitting down-the-hole drill can quickly be substituted for the rotary bit to drill extremely hard rock formations.

A Le Roi 25 hp two-stage air compressor provides ample air for powering the down-the-hole drill and cleaning out hole . . . or is available in single-stage where only rotary drilling is necessary.

The self-propelled LRD-2 is available either on crawler or tire mounting and with either gasoline or diesel power unit. A whole list of extra equipment is available to ease or speed drilling, including lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, . . . all detailed in Specification Sheet AT-146. Write for your copy.



LE ROI

division of Westinghouse Air Brake Co.

Sidney, Ohio

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Montana**—BA 1/31—Bureau Reclamation, Dpt. Interior, Hungry Horse, Mont., centralized grease LUBRICATING SYSTEMS for 105,000 HP turbines, Hungry Horse Project, approx. eight mi. east of Columbia Falls, Flathead Co., Spec. 100C-447.

South Dakota—BA 3/7—Bureau of Reclamation, Huron, Transmission Division, Missouri Basin Proj., Stage 08 and 09, Watertown SUBSTATION ADDNS., Spec. DC 5479.

▲ **Oklahoma**—BA About 2/16—U. S. Eng., Box 61, Tulsa, Zone 2, four schedules, relocating, surf. State Hy. 51, Keystone Reservoir, ENG-34-066-61-54, $2,-000,000. CD 12/22, under LB.

▲† **Texas**—BA About 2/16—U. S. Eng., Box 1229, Galveston, dredging Port Aransas-Corpus Christi waterway, Texas, Bay Channel, Channel at Bascule Bridge and Tule Lake Channel, Nueces Co., ENG-41-243-61-42, $1,000,000. CD 9/30/59.

▲† **Kansas**—BA About 2/24—U. S. Eng., P.O. Box 61, Tulsa 2, Okla., completing embankment and spillway section John Redmond Dam, Burlington, Coffey Co., ENG-34-066-61-53. $10,000,000. Plans deposit $10. CD 9/20.

Colorado—BA 2/28—Bureau Reclamation, Dpt. Interior, Uintah County Courthouse, Vernal, Utah, mailed bids Bureau Reclamation, 64 East Main St., Vernal, Utah, Rangely-Oak Creek and Kremmling-Green Mountain 115-kilovolt transmission lines and Kremmling-Gore Tap 62-kilovolt transmission lines, Colorado River Storage Project, DC 5476. CD 9/19/44.

BUILDINGS—BA

▲ **N. M., Carlsbad**—SCHOOL—BA 1/24—Board Educ., Junior Senior high school, Proj. No. 190-1, $1,300,-000. Plans deposit $50. Extended date. Kern, Smith, 105A Canal St., Carlsbad, archts. Caudill, Rowlett & Scott, 3400 Montrose Blvd., Houston, Tex., archts.-engrs. CD 11/18.

Tex., Archer City — HOSPITAL — BA 1/31 — Archer County, Comrs. Court, Courthouse, county hospital, $400,000. Plans deposit $50. Jas. R. Killebrew, 1710 Dayton St., Wichita Falls, archt.-engr. CD 12/8/58.

Tex., Beaumont—SCHOOL—BA 1/31—South Park Ind. School Dist., Junior High School, Hall and Dowlin Rds., Amelia, $750,000. Ingram & Harris, 1125 Freeway, North Beaumont, archts. Michael Barr, 3410 Anderson St., and B. J. Broadus, 690 Hazel St., engr. CD 7/26.

† **N. M., Los Alamos**—FUEL SERVICE, etc.—BA 2/28—U. S. Atomic Energy Comn., Los Alamos Area Office, plutonium fuel service and development bldg., $375,000-$400,000.

HEAVY CONSTRUCTION—LB & CA

† **Brown Boveri Corp.**, 19 Rector St., New York, N. Y., LB $55,020 (3 bidders), Schedule 1, one 230 kv POWER CIRCUIT BREAKER, Missouri River Basin Proj., Missouri-Oahe Transmission division, DS 5441, SOUTH DAKOTA. Bureau of Reclamation, Dpt. Interior, Denver, Colo. Bids Jan. 5. CD 12/21.

Westinghouse Electric Corp., 55 W. 5th Ave., Denver, Colo., LB $128,825, (6 bidders), Schedule 2, four 161 kv POWER CIRCUIT BREAKERS, (South Dakota).

▲† **R. N. Adams Constr. Co.**, 1305 S. Houston St., P. O. Box 581, Kaufman, Tex., LB $1,167,520, est. $1,149,602, (18 bidders), SPILLWAY EXCAVATION and portion of embankment, Proctor Dam, ENG-41-443-61-10, Leon River, TEXAS. U. S. Eng., P. O. Box 542, Comanche, Tex. Bids Jan. 10. CD 12/15.

C. L. Carroll Co., Inc., P.O. Box 1036, Des Moines, Iowa, LB $68,802, filter, clear well extension, process equipment, equipment, replacing and alterations, GLENWOOD, IOWA. Bd. Waterworks Trustees, City Hall, Glenwood, Iowa. Bids Jan. 5. CD 12/6.

Piedmont Constr. Co., 502 1st Trust Bldg., Lincoln, Neb., LB $309,986, gas distribution system, incl. 145,860 ft. pipe, 719 regulators, 719 meters, SAC CITY, IOWA. City, City Hall, Sac City, Iowa. Bids Jan. 5. CD 12/6.

TEXAS—State Hy. Comn., Austin, cancelled bids to have been opened Jan. 21, grading, strs., base and surf., 18.199 mi., Hy. FM 168 and 1294, Proj. S 1950(2), etc., Hockley & Lubbock Counties. CD 12/20.

† **Gulf Coast Dredging Co., Inc.**, P.O. Box BB, Port Lavaca, Tex., LB $115,549, dredging Gulf Intracoastal Waterway, from Port Isabel to Mud Flats and Arroyo Colorado, Cameron, Willacy and Kenedy Counties, ENG-41-243-61-35, TEXAS. U. S. Eng., P.O. Box 1229, Galveston, Tex. Bids Dec. 21. CD 12/6.

Four States Telephone Co., Brownwood, Tex., Owner Builds, $125,000, rural POLE LINES, Brownwood, Llano-Menard Co., TEXAS.

J.A.C. Electric Co-operative, Bluegrove, Tex., Owner Builds, $100,000, rural electric TRANSMISSION LINES, Bluegrove, Clay Co., TEXAS. CD 7/8.

Midland Telephone Co., 10353 Denton Drive, Dallas, Tex., Owner Builds, $110,000, rural pole LINES and rebuilding lines, Blum, Hill-Bosque Co., TEXAS.

South Plains Electric Co-operative, Inc., Plainview Hy., Lubbock, Tex., Owner Builds, $185,000, electric SUBSTATION, TRANSMISSION LINES, Lubbock, TEXAS. CD 9/2/58.

† **Midland Constructors, Inc.**, 222 W. Adams St., Chicago, Zone 6, Ill., CA $331,558, Missouri River Basin Proj., Transmission Division, FOUNDATIONS AND ERECTING STEEL TOWERS for single-circuit transmission line approaches to Oahe and Fort Randall switchyards, SC-5431, SOUTH DAKOTA. Bureau of Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Dec. 7. CD 12/15, under LB.

† **U. S. Eng.**, Box 61, Tulsa, Okla., cancelled bids to have been opened Dec. 21, LANDSCAPING, ENG-34-066-61-30. Over $25,000. FORT SILL, OKLA. CD 11/23.

† **Bennett & Forbess, Inc.**, Brownwood, Tex., LB $92,735, est. $87,735 (7 bidders), PROJECTS BLDGS., Proctor Dam, ENG-41-443-61-4, Comanche, TEXAS. U. S. Eng., 100 West Vickery Blvd., Fort Worth 4, Tex. Bids Jan. 10. CD 1/3.

Keeling Brothers Constr. Co., 5622 Dyer St., Dallas, Tex., LB $136,737 (11 bidders), second floor, Dallas, MUSEUM OF NATURAL HISTORY, Fair Park, DALLAS, TEX. City, Park Board, City Hall, Dallas, Tex. CD 10/25.

Southwestern State Telephone Co., 210 S. Main St., Irving, Tex., Owner Builds, $130,000, POLE AND CABLE LINES, TEXAS. CD 1/5.

Southland Royalty Aldwell Co., Kermit and Midland, Tex., Owner Builds, $500,000, addl. EARTHWORK for waterflooding, Winkler Co., KERMIT, TEX. CD 8/25.

American Petroleum Corp., Levelland, Tex., Owner Builds, $325,000, EARTHWORK, waterflooding for oil recovery, St. Andrews and Slaughter Fields, Hockley-Cochran Counties, LEVELLAND, TEX. CD 12/14.

Southwestern Bell Telephone Co., Auditorium Circle, San Antonio, Tex., Owner Builds, $750,000, CABLE LINE extensions, SAN ANTONIO, TEX. CD 10/11.

Smith & Williams, 6341 Halifax, Fort Worth, Tex., LB $93,475, est. $100,000, SANITARY SEWER SYSTEM, STRAWN, TEX. City, City Hall, Strawn, Tex. Carter & Burgess, 1100 Macon St., Fort Worth, Tex., engrs. Bids Dec. 28. CD 11/28.

† **Crawford Electric Co.**, Box 431, North Platte, Neb. LB $827,103, est. $870,305, (11 bidders), Missouri River Basin Proj., stringing conductors and overhead ground wires, Jamestown Fargo Transmission line, NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Fargo, N. D. Bids Jan. 5. CD 11/17.

† **H. Halvorson, Inc.**, 901 N. 6th St., Grand Forks, N. D., LB $615,241, operations area Pickstown Air Force Station, ENG-25-066-61-80, PICKSTOWN, S. D. U. S. Eng., 215 N. 17th St., Omaha, Neb. Bids Dec. 20. CD 12/1.

NEBRASKA—Dpt. Rds., State Capitol, Lincoln, Zone 9,

Missouri Valley Constr. Co., P. O. Box 811, Grand Island, Neb., CA $560,607, grading, paving culverts, guard rail, .4 mile Grand Island-York Rd. near Doniphan, No. I 80-7(9), Hall Co., Bids Dec. 15. CD 12/21, under LB.

OKLAHOMA—State Hy. Dpt., Capitol 5, Oklahoma City,

G. E. Smith & Sons, Noble, Okla., CA $586,461, grading, draining 6.752 mi. US 75 north of Tulsa Co. line, Washington Co. Bids Dec. 20. CD 12/29, under LB.

† **Wyoming**—Bureau P. Rds., Denver Federal Center, Denver, Colo.,

MacGregor Triangle Co., 200 Sunrise Rim, Bolse, Idaho, CA $906,254, grading, bit. stab. base, 6.1 mi. Proj. 9-01-B2, D2, E2, Sheridan and Big Horn Counties. Bids Dec. 21. CD 12/29, under LB.

▲† **Eugene Luhr & Co.**, Box 48, Columbia, Ill., **Patton-Tully Transportation Co.**, Box 28, Memphis, Tenn. and Massman Constr. Co., 7332 Lindbergh Blvd., St. Louis 25, Mo., CA $1,174,064, timber piling clump dikes and stone fill dikes, Mississippi River, Cape Girardeau, Scott and Mississippi Counties, Mo. and Union and Alexander Counties, Ill. CIVENG-23-065-61-37, MISSOURI and ILLINOIS. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Dec. 20, awarded Jan. 6. CD 12/29, under LB.

BUILDINGS—LB & CA

▲ **Embassy House Apartments**, c/o B. Gingold & Assocs., archts., 814 Title Insurance Bldg., Minneapolis, Minn., rejected bids Dec. 28, two 6 story each, 36 units APARTMENTS, Minnetonka Bldg. and Joppa Ave., ST. LOUIS PARK, MINN. $1,000,000. CD 12/27.

▲ **St. Paul Terminal Warehouse Co.**, 425 East Eighth St., St. Paul, Owner Builds, Over $1,000,000 buildlease 2 story 200 x 1,000 ft PLANT, Hys. 36 and 280 ROSEVILLE (P. O. ST. PAUL,) MINN. CD 12/19.

▲ **Fluor Corp., Ltd.**, 2500 S. Atlantic Blvd., Los Angeles, Calif., CA Total cost $19,000,000, 175,000 kw Tecumseh POWER PLANT addn., TECUMSEH, KAN. Kansas Power & Light Co., 800 Kansas Ave., Topeka, Kan.

▲ **Olson Constr. Co.**, 410 S. 7th St., Lincoln, Neb., LB $1,696,990, general contract 2 story, sub-bsmnt., Sheldon MEMORIAL ART GALLERY addn., LINCOLN, NEB. Bd. Regents, University of Nebraska, Rm. 511, Admin. Bldg., 14th and R Sts., Lincoln, Neb; Bids Jan. 9, CD 12/19;

▲ **Farnsworth & Chambers**, Box 74, Houston, Tex., CA $1,540,300, No. 2, STATE OFFICE BLDG., AUSTIN, TEX. Texas State Bldg. Comn., Main Admin. Bldg., Austin, Tex. Coleman & Rolfe, 5100 Travis St., Houston, Tex., archts. CD 4/28.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA Total cost $75,000,000, ethylene, benzene and napthalene PLANT at Chocolate Bayou near ALVIN, TEX. Monsanto Chemical Co., Lindberg St. and Olive Rd., St. Louis, Mo. CD 1/6.

▲ **Brown & Root, Inc.**, Box 3, Houston, Tex., CA Est. $3,250,000, CARBON BLACK PLANT, Cosden Refinery grounds, BIG SPRINGS, TEX. Sid Richardson Carbon Black Co., Fort Worth Club Bldg., Fort Worth, Tex., CD 8/2.

▲ **J. B. Boone, Builder**, 4320 Alief Rd., Houston, Tex., Owner Builds, $1,000,000, 98-unit French-style, garden type APARTMENTS, 3200 Blk. Sage Rd., HOUSTON, TEX. Lawrence D. Starnes, 2214 Maroneal St., Houston, Tex., archt. CD 11/10/58.

▲ **Farb Interests**, 9125 Stella Link Rd., Houston, Tex., Owner Builds, $960,000, 60-unit, masonry luxury APARTMENTS, Link Valley Driver, CD 6/5/58. $1,088,000, 68-unit, masonry luxury APARTMENTS, Stella Link Rd., HOUSTON, TEX.

▲ **Frank C. Bliss**, 711 W. 7th St., Fort Worth, Tex., Owner builds $1,750,000, 1st unit, 1 story, 170,250 sq. ft., brick, tile, con. and steel Bliss SHOPPING CENTER, Tarrant Rd. and Edgewood Terrace, FORT WORTH, TEX. H. C. Maples, 711 West 7th St., Fort Worth, Tex., archt. CD 5/16/58.

▲ **H. A. Lott, Inc., Contractor**, 6101 Hillcroft St., Houston, Tex., CA $1,250,000, 2 story OFFICE, HOUSTON, TEX. Southwestern Savings Assn., 3401 Main St., Houston, Tex. Wisdom & Zimmerman, 1116 Hawthorne St., Houston, Tex., archts. CD 7/12.

▲ **Robert E. McKee, General Contractor, Inc.**, Drawer 562, El Paso, Tex., CA $4,837,550, R. E. Thomason HOSPITAL ADDN., EL PASO, TEX. El Paso County Hospital Dist., County Bldg., El Paso, Tex. Garland & Hilles, Banner Bldg., El Paso, Tex., archts. A. V. Benner, Sr., El Paso National Bank Bldg., El Paso, Tex., engr. Bids Dec. 1. CD 12/22 under LB.

▲ **Wm. G. Farrington & Co.**, 1661 Tanglewood St., Houston, Tex., CA $3,700,000, 10 story OFFICE AND SHOPPING CENTER, Westheimer & Post Oak Rd., HOUSTON, TEX. Tanglewood Corp., 1661 Tanglewood St., Houston, Tex. CD 11/10.

▲ **Harris County Development, Inc., W. K. King**, c/o 2706 Richmond Ave., Houston, Tex., Owner Builds, $3,200,000, 270 DWELLINGS, Pt. Arthur Freeway, HOUSTON, TEX. Dunaway & Jones, 2706 Richmond Ave., Houston, Tex., archts. CD 9/2.

▲ **Pace Setter Homes, Inc.**, 6723 Glen Rock St., Houston, Tex., Owner Builds, $2,350,000, 100 DWELLINGS, Barkley Square South, South of Brays Bayou, HOUSTON, TEX. CD 11/14.

▲ **Coym & Tillison**, 1401 Beusch Dr., Houston, Tex., Owner Builds, $2,150,000, 150 DWELLINGS, Parkview Manor addn., PASADENA, TEX.

Armoo Drainage & Metal Products, Inc., C & I Life Bldg., Houston, Tex., Owner Builds, $125,000, MFG. PLANT, SCHULENBURG, TEX. CD 1/4.

▲ **Carney Construction Co.**, P. O. Box 103, Greeley, Colo., CA $1,303,421, est. $1,550,000, 120,000 sq. ft. LABORATORY SCHOOL, Colorado State College, GREELEY, COLO., State Planning Commission, State Office Bldg., Denver, Colo., Bids Dec. 22, awarded Jan. 4. CD 1/4, under LB.

† **Canterbury Engineering Co.**, 3636 Forest Lane, Dallas, Tex., CA $457,116, general field and maintenance shop, ENG-34-066-61-28, FORT SILL, OKLA. U. S. Eng., Bcx 61, Tulsa 1, Okla. Bids Dec. 21. CD 11/16.

▲ **A. A. and E. B. Jones**, 1050 S. Jason, Denver, Colo., LB $1,075,796, est. $1,250,000 (9 bidders), SCIENCE, ENGINEERING and RESEARCH CENTER (1st unit), one bldg., 3 story, 38,300 sq. ft.; 2nd bldg., 2 story, 15,500 sq. ft.; third bldg., 1 story, 9,500 sq. ft., DENVER, COLO. University of Denver, University Park Campus, Denver, Colo. Bids Jan. 5. CD 12/15.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 2/1—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. East Twin Creek, upstream from Marshall Blvd., San Bernardino, CIVENG-04-353-61-12. $1,200,000. CD 9/20.

▲ **Calif., Los Angeles**—BA 2/14—Los Angeles Dpt. Airports 1 World Way, LIGHTING, apron, paving, Complex II, Phase II Part B, Los Angeles International Airport. Extended Date. $1,000,000. Plans deposit $25. CD 11/29.

▲ **Calif., Los Angeles**—BA 2/17—Los Angeles County Flood Control Dist., 2250 Alcazar St., Third Unit, Los Cerritos Storm Drain to serve sections Lakewood, Bellflower and Long Beach, lines A, B, C and D. $6,000,000. CD 11/10/58.

BUILDINGS—BA

▲ **Calif., West Covina**—BA 1/27—West Covina Community Hospital Assoc., 5515 Franklin Ave., Los Angeles 28, Calif., 4 story 150-bed rein.-conc. HOSPITAL, Sunset and Merced Ave. $1,000,000. Verge & Clatworthy, 4342 Eagle Rock Blvd., Los Angeles, Calif. archts.

▲ **Calif., Linda**—BA 2/2—Yuba College Bd. Trustees, Marysville, Calif., COLLEGE. $2,994,800. CD 6/1, under Calif., Yuba City.

NEW! VOIDS IN CONCRETE with ELGOOD INFLATABLE VOID FORMS

REUSABLE RUBBER VOID FORMS FOR SEWERS, SLABS, DRAINS & DUCTS. SUPERSEDES ALL VOID FORMING TECHNIQUES.

- ALL DIAMETERS ¾" TO 120"
- GUARANTEE MINIMUM OF 100 USES Field experience, 250-3000 uses
- STAFF AVAILABLE FOR SPECIALIZED PROBLEMS

ELGOOD CONCRETE FORMS CORP.
378 TEN EYCK ST., BROOKLYN, N.Y. HY 7-5445

DUDGEON HYDRAULIC JACKS
SALES RENTALS
CAPACITY TO 600 TONS

FOR:
- PILE TESTING
- UNDER-PINNING
- BRIDGES
- PIPE PUSHING
- SOIL TESTING

Write to Dept. R

RICHARD DUDGEON INC.
789 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

"NEITHER RAIN NOR SNOW NOR DARK OF NIGHT . . . ."

But often forgetting the postal zone number when you address an envelope can delay your letter long enough to miss the appointed round. There are 106 cities in America where a complete address includes a zone number. Always use it when writing to or from these cities.

HEAVY CONSTRUCTION—LB & CA

▲ **WASHINGTON**—State Hy. Comn., Dpt. Hys., Olympia, Bids opened 1/10, BRIDGES,
Bergerson & Roberts and Earley Constr. Co., 2015 Center St., Tacoma, Wash., LB **$1,506,337**, (7 bidders), four bridges, Primary State Hys. 1 and 5, Renton, King Co. CD 12/20.

▲† **Hydraulic Dredging Co.**, Central Bldg., Oakland, Calif., LB **$6,181,257**, est. $5,760,260, (6 bidders), DREDGING Sacramento River Ship Channel, Mile 18.2 to Mile 26.8 and plugs at Mile 36.0 and Mile 41.0 nearly 19,000,000 cu. yd. excav., Spec. 2494, ENG-04-167-61-27, CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids Jan. 10. CD 12/21.

▲ **J. B. Allen & Co.**, 807 W. Winston, Los Angeles, Calif., CA **$1,200,000** MONORAIL, 1313 S. Harbor Blvd., ANAHEIM, CALIF. Disneyland, 1313 S. Harbor Blvd., Anaheim, Calif. Wheeler & Gray, 800 Colorado, Pasadena. Calif. engrs.

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles,
Sully-Miller Contracting Co., 19761 Santiago Canyon Rd., Box 432, Orange, Calif., CA **$4,349,750**, grading, paving to constr. 4.2 mi. 4 lane freeway on Newport Freeway (State Sign Rte. 55) between just south of Chapman Ave. in Orange and Riverside Freeway to North, incl. 11 traffic separation structures and bridges, Orange Co. Bids Dec. 22. CD 12/28, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, bids opened 1/5,
Healy Constr. Co. and **C, K, F-M**, 7350 Palmdale Blvd., Palmdale, Calif., LB **$12,625,800**, (5 bidders), grading, paving and 16 structures, 6 mi. 8 lane freeway, Golden State Freeway between Osborne St. and San Fernando Rd. and grading and structure work for future San Diego Freeway, Los Angeles Co. CD 11/16.

▲† **American Elin Corp.**, 11 Broadway, New York, N. Y., LB **$1,398,225**, (9 bidders), two generators Spring Creek Power Plant, Central Valley Proj., near Redding. Spec. 5447. CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Jan. 5. CD 11/23.

BUILDINGS—LB & CA

▲ **Jordan-Wilcomb Co.**, 406 S. 6th St., Boise, Idaho, CA est. **$1,000,000**, 2 story, 50,000 sq. ft. MOTEL, BOISE, IDAHO. Stilwell-Pengily Motel Co., 500 Washington St., Boise, Idaho. CD 1/4, under LB.

▲ **H. Halvorsen, Inc.**, Judge Bldg., Salt Lake City 1, Utah, CA **$1,000,000**, AIR-CONDITIONING EQUIPMENT PLANT, 86 acre site, KEARNS, UTAH. Trane Co., 206 Cameron Ave., LaCrosse, Wis. (Correction—plant location). CD 11/3, under LB, Utah, Salt Lake City.

▲ **Purvis Constr. Co.**, E 5019 Sprague St., Spokane, Wash. LB **$3,091,736**, (8 bidders), FEDERAL EXHIBITS bldgs. for Century 21 Exposition, SEATTLE, WASH. General Services Admin., 909 1st Ave., Seattle, Wash. Bids Jan. 10. CD 11/28.

▲ **Westinghouse Electric Corp.**, 3 Gateway Center, Pittsburgh, Pa., CA 2 cross compound quadruple EXTRACTION GENERATOR UNITS 1 and 2, Morro Bay Power Plant addn., San Luis Obispo Co., CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif. CD 4/29.

▲† **Alcan-Pacific Co.**, 1921 Stockton Blvd., Sacramento, Calif., CA **$3,713,780**, 230 units CAPEHART HOUSING No. 3, BEALE AIR FORCE BASE, CALIF. Base Procurement Office Bldg., 2529 Beale Air Force Base, Calif. Bids Dec. 8. CD 12/28, under LB.

▲ **Buckeye Constr. Co.**, 292 S. La Cienega Blvd., Beverly Hills, Calif., CA **$4,300,000** marble and tile OFFICE, 9461 Wilshire Blvd., Beverly Hills Tract, BEVERLY HILLS, CALIF. Wilshire-Beverly Center, 292 S. La Cienega Blvd., Beverly Hills, Calif. Victor Gruen, 135 S. Doheny Dr., Beverly Hills, Calif., archt.

▲† **Ralph Larsen & Son, Inc.**, 62 S. Linden Ave., San Francisco, Calif., CA **$1,752,813**, Fleet broadcast facility, U. S. Naval Radio Station (T) NBy 29303, Spec. No. 29303/60, DIXON, CALIF. Dist. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids Dec. 21. CD 11/22.

▲ **H. C. Elliit**, 268 San Lorenzo, Pomona, Calif., CA **$1,008,400**, 65 stucco DWELLINGS, Berkeley Tract 10,124 GOLETA, CALIF. Montclair Enterprises, 26 San Lorenzo, Pomona, Calif.

Frank Horby, 127 N. La Breau Ave., Granada Hills, Calif. Owner Builds **$637,800**. 38 frame and stucco DWELLINGS, Tract 25550, GRANADA HILLS, CALIF. Cliff Osten & Assocs., 9025½ E. Florence Ave., Downey, Calif., archts. CD 4/21.

Bay Constr. Co., 789 W. 20th St., Newport Beach, Calif. Owner Builds. **$455,000.** 35 frame and stucco DWELLINGS, Tracts 3933 and 4621, HUNTINGTON BEACH, CALIF.

George L. Mallery Co., 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$485,000**, 37 DWELLINGS, Valeda, Cheverton, Barbata and Greenworth Drives, Tract 24179, LA MIRADA, CALIF. Wanda Highlands, 10835 Santa Monica Blvd., Los Angeles, Calif.

Dail Development Corp., 3702½ W. Magnolia Blvd., Burbank, Calif., Owner Builds. **$225,000.** WAREHOUSE, 1840 N. Soto St., LOS ANGELES, CALIF. W. M. Simpson, 712 Fair Oaks Ave., South Pasadena, Calif., engr.

▲ **Bond Land Co.**, P. O. Box 31, Beverly Hills, Calif., CA **$1,981,700**, 133 DWELLINGS, Tract 3483, LOS ALAMITOS, CALIF. Southern California Constr. Co., P. O. Box 31, Beverly Hills, Calif.

▲ **Rosecrans Development Corp.**, 5133 W. Washington Blvd., Los Angeles, Calif., CA est. **$1,500,000**, thirteen 2 story APARTMENTS, Athens Dist., LOS ANGELES, CALIF. Hillview Apt. Inc., 5133 W. Washington Blvd., Los Angeles, Calif. Hugh Gibbs, 441 E. 1 St., Long Beach, Calif., archt.

Al Arnold, 5285 El Morado, Montclair, Calif. Owner Builds. **$574,340.** 40 stucco DWELLINGS, Fremont, Marion and El Morado Sts., Tract 6139, MONTCLAIR, CALIF.

D. Fawell, 3404 Roundmeadow Rd., Calbasas, Calif., Owner Builds. **$412,000.** stucco APARTMENT and GARAGE, 5252 Corteen Place, NORTH HOLLYWOOD, CALIF.

Hermelinda Homes Inc., 18606 Community St., Northridge, Calif. Owner Builds. **$914,000.** 44 stucco DWELLINGS, Reseda and San Fernando Mission Blvds., St. Baird and Amigos Aves., Tract 23591, NORTHRIDGE, CALIF.

Treiberg & Ruesink, 1391 Caliens Rd., Ventura, Calif., CA **$535,692**, Rio INTERMEDIATE SCHOOL, El Rio, OXNARD, CALIF. Rio School Dist., 3300 Cortez St., Oxnard, Calif. Bids Dec. 13. CD 12/21, under LB.

Cal Constr. Co., 224 S. I St., San Bernardino, Calif., LB **$621,496**, 2 story, rein.-con. and steel Elks LODGE and First Western BANK, SAN BERNARDINO, CALIF. San Bernardino Elks Lodge, 466 W. 4th St., San Bernardino, Calif. Wm. F. Mellin, 671 D St., San Bernardino, Calif., archt.

Harcur Co., 10835 Santa Monica Blvd., Los Angeles, Zone 25, Calif. Owner Builds. **$450,000.** 30 stucco DWELLINGS, Barrywood Ave., Tract 25153, SAN PEDRO, CALIF.

Aspan Land Co., 16901 S. Western Ave., Gardena, Calif. CA **$946,500**, 72 DWELLINGS, E. Ackley St., E. San Patricio and E. Arroyo Drives, Tract 71-74, Tract 25610, SOUTH SAN GABRIEL, CALIF. Shadwell Inc., 16901 S. Western Ave., Gardena, Calif.

▲ **Kingsdale Land Co.**, 16901 S. Western Ave., Los Angeles, Calif., CA **$1,017,000**, 80 DWELLINGS, Ackley St., Alisar, Eroica and Coriolahus Aves., SOUTH SAN GABRIEL, CALIF. Mr. McNab, 16901 S. Western Ave., Los Angeles, Calif.

▲ **Swinerton & Walberg Co.**, 1723 Webster, Oakland, Calif. CA **$2,314,000**, 124,800 sq. ft., structural steel, frame, etc. LABORATORY and ENGINEERING PLANT ANNEX, SUNNYVALE, CALIF. Lockheed Aircraft Corp., Missile Systems, P. O. Box 504, Sunnyvale, Calif. Bids Dec. 6 CD 12/1.

Nakakura Constr. Co., 2621 Waiwai Loop, Honolulu, Hawaii, CA **$667,093**, Wahiawa Intermediate SCHOOL, HONOLULU, HAWAII. City and Honolulu County, Punchbowl and King Sts., Honolulu, Hawaii. Bids Dec. 22, awarded Dec. 27. CD 12/2.

Herbert T. Hayashi, 627 South St., Honolulu, Hawaii, Owner Builds. **$500,000.** Liona APARTMENTS, double level parking, HONOLULU, HAWAII. Takashi Anbe, 1451 S. King St., Honolulu, archt.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Oshawa—BA 2/6—City, City Hall, 6 span, rein.-con. slab bridge on rein.-con. piers and abutments and 2,000 ft. 4-lane paved detour. Over $100,000. Plans deposit $25. Lazarides, Damas & Smith Ltd., 209 Davenport Rd., Toronto, engrs.

▲ **ONTARIO**—BA 2/8—Dpt. Hys., Parliament Bldgs., Downsview, BRIDGE,
Kenora—Rainy Lake Causeway and approach Hy. 11, (contract 60-249) $1,625,000.

BUILDINGS—BA

▲ **B. C., Vancouver**—FINE ARTS CENTRE—BA 1/25—University of British Columbia, campus, Stage 1, 4 story, bsmnt.., 70 x 160 ft., rein.-con., glazed brick Fine Arts Centre. $1,000,000. Plans deposit $50. Thompson Berwick & Pratt, 1553 Robson St., archt. O. Safir, 525 Seymour St., engr. CD 6/19/59.

▲ **Ont., Toronto**—BA 1/26—York University College, 84 Queen's Park Crescent, 3 story, 42x378 ft. rein.-conc. brick UNIVERSITY, $1,500,000. Marani, Morris & Allan, 1250 Bay St., archts. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., engrs.

▲ **Que., Montreal**—CONCERT HALL—BA 2/3—Sir George Etienne Cartier Corp., 3819 Calixa-Lavalee Ave., first stage, concert hall, St. Catherine St. W., LaGrande Salle, plaza and part of garage below plaza, $7,500,000. Plans deposit $500. Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud & Sise, 1010 St. Catherine St. W., archts. Brouillet & Carmel, 3600 Barclay St. engrs. CD 4/4.

BUILDINGS—SLC

▲ **Que., Montreal** — MILL — Turcotte Paperboard Mills Ltd., 5701 Cote St. Paul Bd., soon lets contract (selected list of bidders), first phase, excavation and fdns. for equipment, board mill extensions. Total est. $1,250,000. Power Corp. Designers & Consultants Ltd., 355 St. James St. W., archts. CD 11/4.

HEAVY CONSTRUCTION—LB & CA

Alberta Utility Builders Ltd., 4532 6th St. N.E., Calgary, Alta.; LB **$414,553,** supply and install, 70,000 ft. 8 and 10 in. internal sanitary sewers, manholes and appurtenances, 1,150 service connections, COQUITLAM, B. C. Dist. of Coquitlam, 1111 Brunette St., New Westminster, B. C. Bids Dec. 21. CD 12/8.

▲ **Foundation Co. of Canada Ltd.**, 1900 Sherbrooke St. W, Montreal, Que., LB **$3,381,104** (8 bidders) reconstr LONG WHARF, SAINT JOHN, N. B. National Harbours Bd., Rm. 720, Hunter Bldg., Ottawa, Ont. CD 1/4/56.

BUILDINGS—LB & CA

▲ **Pearson Constr. Co., Ltd.**, 1019 Erin St., Winnipeg, Man., CA **$4,570,728,** (12 bidders) 6 story, 160,000 sq. ft. ADMINISTRATION bldg. Portage Ave., WINNIPEG, MAN. Manitoba Telephone System, 166 Portage Ave. E., Winnipeg, Man. Bids Dec. 20. CD 11/29.

J. B. MacKenzie & Son Ltd., 8 James St., Georgetown, Ont., CA **$643,866,** 24,000 sq. ft. brick, open web steel joists HOME FOR AGED 10,000 sq. ft. lower grade floor Shelburne, ORANGEVILLE, ONT. County of Dufferin, Orangeville Courthouse, Orangeville, Ont. Bids Sept. 23, awarded Dec. 30. CD 9/19.

▲ **Teron Constr. Co., Ltd.**, 227 Laurier Ave. W., Ottawa, Ont., CA Est. **$1,000,000,** 5 story OFFICE, Laurier Ave., OTTAWA, ONT. International Business Machines Co., Ltd., 218 Laurier Ave. W., Ottawa, Ont.

Minto Constr. Co., 1547 Merivale Rd., Ottawa, Ont., Owner Builds, **$804,000,** 3½ story, concrete, brick, terrazzo, tile APARTMENT, Parkwood Hills, OTTAWA, ONT.

▲ **Orlando Realty Ltd.**, 224 Norseman St., Toronto, Ont., Owner Builds, **$1,400,000,** two APARTMENTS, Islington Ave. N., TORONTO, ONT. S. S. Voxoris, 4195 Dundas St. W., Toronto, Ont., engr.

Canadian Structural Steel Works Co., Ltd., 3700 St. Joseph Blvd. E., Montreal, Que., LB **$567,306,** structural steel for Carillon POWERHOUSE and 4 story office penthouse, CARILLON, QUE. Quebec Hydro-Electric Comn., 107 Craig St. W., Montreal, Que.

Wingold Constr. Co., Ltd., 25 Wingold Ave., Toronto, Ont., CA Est. **$150,000,** 25,000 sq. ft. FACTORY addn., 111 Manville Rd., TORONTO, ONT. International Formed Tubes Ltd., 111 Manville Rd., Toronto, Ont.

Bernard Malo, Inc., 517 Ste. Anne St. N., Joliette, Que., CA **$932,550,** SECONDARY REGIONAL SCHOOL, Beaudry St., JOLIETTE, QUE. Catholic School Bd. of Joliette, 135 St. Barthelemy St. S., Joliette, Que. Bids Dec. 13, awarded Dec. 29. CD 12/21, under LB.

J. R. Bourdages Constr. Ltee, 10575 St. Lawrence Blvd., Montreal, Que., CA **$663,000,** 2 and 3 story, brick, concrete, rein.-con. frame, SCHOOL and GYMNASIUM, Blvd. de Mormandie, LONGUEUIL, QUE. Catholic School Bd. of Longueuil, Longueuil, Que. Bids Nov. 7. CD 11/16, under LB.

PUERTO RICO

HEAVY CONSTRUCTION—BA

▲ **Puerto Rico, Salinas**—BA 2/9—U. S. Eng., Box 4970, Jacksonville, Fla., U. S. A., 150 units CAPEHART HOUSING. $2,170,100.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

COSTA RICA—BA 2/3—National Procurement Office, San Jose,
11.81 kms of four-lane divided highway between San Jose and El Coco Airport. Plans deposit $2.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

Thailand—Bids in March 1961—Royal Irrigation Dpt. of Kingdom of Thailand, Bangkok, furnishing and del. fob Contractor's shipping point or cif Bangkok Wharf, Thailand, three cooling water pumps, centrifugal type, two cooling water pumps, centrifugal type, one water booster pump, regenerative turbine type, one water booster pump, regenerative turbine type, two water sump pumps, vertical turbine type, two water sump pumps, vertical turbine type, four oil pumps, rotary geartype for Bhumiphol Power Plant, Yanhee Multipurpose Proj., Bid No. YS-2-17. Each request must be accompanied by a check or money order, payable to the Royal Irrigation Dept. in the amount of U. S. $10 for each copy of the Contract Documents requested. The remittance is nonreturnable. Engineering Consultants, Inc., 1901 South Navajo St., Denver 23, Colo., U. S. A. engr.

HEAVY CONSTRUCTION—LB & CA

▲ **E. V. Lane Corp.**, 2675 Park Bldg., Palo Alto, Calif., U.S.A., CA **$4,500,000,** 300 meter NE/SW runway at Tan-son-Nhut International Airport, SAIGON, VIETNAM. Dpt. P. Wks., Govt. Vietnam, Saigon, Vietnam. CD 10/15/59.

▲ **Foster Wheeler Corp.**, 666 5 Ave., New York, N. Y., U. S. A., CA **$35,000,000** design and construct PETROCHEMICAL PLANT, ZAGREB, YUGOSLAVIA. Organsko Kemijska Industrija (OKI), Boskoviceva 33, Zagreb, Yugoslavia. CD 6/13.

PROPOSED PROJECTS

WATER SUPPLY

▲ **N. J., North Brunswick** — Twp. North Brunswick, Municipal Bldg., 4 Linwood Pl., water sys., plant and transmission lines. **$1,460,000.** Chas. J. Kupper, 15 Stelton Rd., New Market, N. J., archt.-engr.

▲ **N. M., Raton**—City, City Hall, 14 in. water line, Lake Maloya to City Filter Plant, **$480,000;** dam, below Lake Alice in Sugarite Canyon, **$3,000,000.** Alfred J. Ryan & Associates, 1340 Glen Arm Place, Denver, Colo., consult. engrs.

▲ **Tex., Brady**—City, City Hall, voted bonds Dec. 20, earthen dam and reservoir at Lake Brady, **$2,335,000.** Bids middle of 1961. Fresse, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 12/13.

SEWERS, WASTE DISPOSAL

▲ **Calif., Los Angeles**—City, City Hall, **$46,000,000** bond election Apr. 4, six year sanitary sewer constr. program.

▲ **Mich., Muskegon**—Norton Twp., 4801 Henry St., sanitary sewers and treatment plant. **$1,706,000.** Williams & Works, 238 Ottawa N. W., Grand Rapids, engrs. CD 12/19.

N. C., Henderson—City, City Hall, bond election May 2, sewage treatment plant, lines, pumping stations. **$906,500.** L. E. Wooten & Co., 306 W. Dawson St., Raleigh, consult. engrs. CD 3/17.

▲ **O., Cleveland Heights**—City, 2953 Mayfield Rd., Cleveland, Zone 18, sewer program, **$1,000,000.** Frank L. Woodruff & Assocs., 3482 Lee Rd., Cleveland, Zone 20, consult. engr. CD 11/14.

▲ **Utah, Bountiful**—South Davis Sewer Imprvt. Dist., 2022 Main St., South treatment plant. **$1,000,000.** Nielsen, Reeve & Maxwell, Inc., 429 W. 5 St., South, Bountiful, Utah, and Henningson, Durham & Richardson, Colorado Springs, Colo., consult. engrs. Bids in 1961.

▲ **Wash., Federal Way (Auburn P.O.)**—Lakehaven Sewer Dist., sewage collection system and treatment plant, 10 mi. line and several pumping plants. **$1,700,000.** Hill & Ingman, 3104 Western Ave., Seattle, Zone 1, consult. engrs. CD 9/23/59.

BRIDGES

▲ **Ont., Toronto**—Twp. of North York, Municipal Bldg., 5000 Yonge St., 1,020 ft. bridge, Don River Valley at Sheppard Ave. **$2,000,000.** G. V. Kleinfeldt & Assocs. Ltd., 20 Queen St. W., Brampton, consult. engrs. Bids in April.

STREETS AND ROADS

▲ **Iowa, Council Bluffs**—City, City Hall, paving, storm sewers, Harrison St., **$750,000;** paving 64 blocks, various streets to link streets presently improved, **$350,000.** Hennington, Durham & Richardson, Inc., 2962 Harney St., Omaha 2, Neb., consult. engrs. CD 12/27.

UNCLASSIFIED

▲ **New York**—PIPE LINES—Iroquois Gas Corp., 37 Church St., Buffalo, extension of lines into new areas, Erie and surrounding counties. **$7,400,000.** Constr. 1961.

▲ **Texas**—PURIFICATION PLANT, etc.—El Paso Natural Gas Co., El Paso Natural Gas Bld., El Paso purification plant, **$2,500,000;** dehydration plant, **$3,500,000;** field gathering lines, **$750,000;** gas line, Brown-Bassett field to Owners system main line. **$800,000,** Sanderson area.

PUBLIC BUILDINGS

▲ **Calif., Los Angeles**—BOYS PROBATION CAMP—Los Angeles Co., 108 W. 2 St., 15 bldgs. Santa Monica Boys Probation Camp, 433 S. Encinal Canyon Rd., Cornell. **$1,130,000.** Bids Feb. 6, 1961.

▲ **Calif., Los Angeles**—COUNTY OFFICE ADDN.—Los Angeles Co., 500 W. Temple St., plans by Maurice H. Fleischman, 8844 W. Olympic Blvd., Beverly Hills, 2 story Santa Monica county office addn., Santa Monica. **$2,179,625.**

▲ **Calif., Los Angeles**—MUSEUM—Los Angeles Co., 500 W. Temple St., plans by William L. Pereira & Assoc., 1231 W. 5 St., motion picture and television museum. **$4,000,000.**

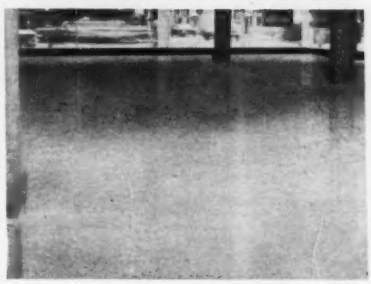
▲ **Conn., New Britain**—CLASSROOM—State P. Wks. Dpt. 165 Capitol Ave., Hartford, classroom bldg., Central Connecticut State College, **$1,250,000.**

▲ **Ga., East Point**—HOSPITAL—South Fulton Hospital Auth., 114 E. S. East Point St., plans by Abreu & Robeson, 141 Walton St. N.W., Atlanta, 150-bed hospital. **$2,500,000.** Chastain & Tindel, 165 Alexander St. N.W., Atlanta, struct. engrs. CD 10/1/58.

▲ **Iowa, Cedar Falls**—POWER PLANT—City Municipal Utilities Comn., 612 E. 12th St., power plant expansion, incl. 16,500 kw. generator, **$3,912,000.** Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, Minn., consult. engrs. Constr. 1961.

TRETOL
DEKOTE
CONCRETE FLOOR TREATMENT

1 APPLICATION:
CURES
HARDENS
SEALS
DUSTPROOFS



Apply DEKOTE to freshly troweled concrete floors by spraying, brushing, or by roller, and you get a floor that looks better, is stronger, will last longer and be easier to maintain.

DEKOTE, as a curing agent, retains 95% of the moisture in concrete to assure positive, complete hydration for maximum strength and hardness. It effectively seals concrete surfaces against most acids, oils, greases, and other foreign materials. Objectionable dusting, usually found in untreated concrete is eliminated.

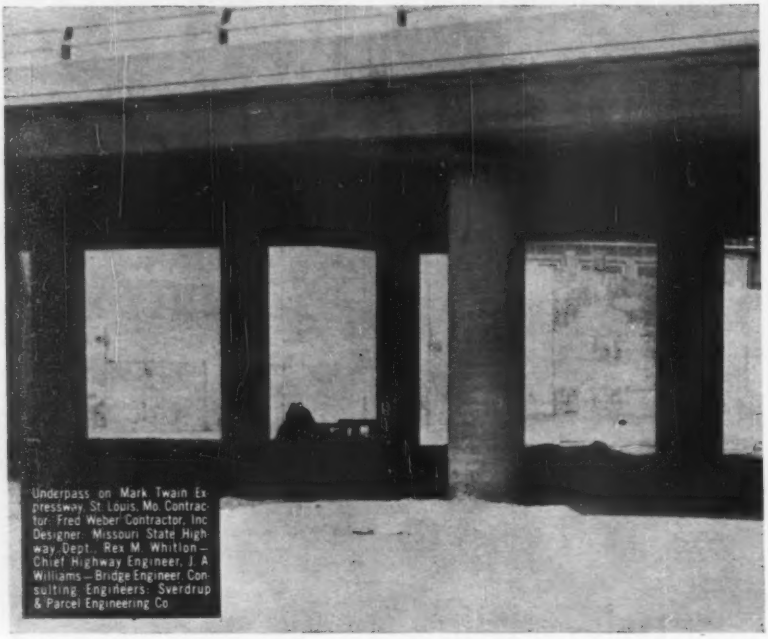
Paints and tile adhesives may be applied to DEKOTE-treated floors without removing the DEKOTE membrane.

DEKOTE is a clear, fast-drying material that imparts a smooth, natural lustre to concrete that makes it easy to maintain and clean.

For complete information and specifications on this new concrete floor treatment, write for DEKOTE T 130 Catalog Sheet.

TRETOL INC.
Quality
Products for Concrete and Masonry
6051 W. 65TH ST., CHICAGO 38, ILLINOIS
Division of SERVICISED PRODUCTS CORP.

For speed in construction of round concrete columns



Underpass on Mark Twain Expressway, St. Louis, Mo. Contractor: Fred Weber Contractor, Inc. Designer: Missouri State Highway Dept., Rex M. Whitton—Chief Highway Engineer, J. A. Williams—Bridge Engineer. Consulting Engineers: Sverdrup & Parcel Engineering Co.

Use time-saving, labor-saving

SONOCO

Sonotube®

FIBRE FORMS

On highway projects, construction delays can be measured *in dollars*. That's why, for round concrete columns in bridges and overpasses, it makes sense to use the fastest, most economical forming method—SONOTUBE Fibre Forms.

These low-cost forms are lightweight and easy to handle—they place, brace, pour, and strip quicker. One-piece, one-time-use SONOTUBE Fibre Forms require no assembly, no dismantling, form cleaning, resetting or return shipping. And they are easily sawed to fit wall and beam forms or punched for tie-in rods and anchor bolts.

On any job calling for round concrete columns, save time... labor... and money... by using Sonoco SONOTUBE Fibre Forms. There's a type to meet any job requirement economically—in sizes from 2" to 48" I.D. Order standard 18' lengths, or required lengths.

See our catalog in Sweet's

For complete information and prices, write

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY, HARTSVILLE, S. C. • La Puente, Calif. • Fremont, Calif. • Montclair, N. J. • Akron, Indiana • Longview, Texas • Atlanta, Ga. • Ravenna, Ohio • Brantford, Ont. • Mexico, D. F. 5422

▲ **Iowa, Davenport**—SCHOOLS—Bd. Educ., Community School Dist., 1001 Harrison St., elementary school, Fairmont St., $500,000, Junior High School, $1,500,000, elementary school, Wisconsin Ave., $500,000.

▲ **Ky., Bowling Green**—PHYSICAL EDUCATION, etc.—Commonwealth of Ky., Div. Purchases, 327 Capitol Annex Office, Frankfort, plans by R. Ben Johnson, 1581 Stop & Shop Court, Owensboro, physical education, $2,500,000, Frank Cain, Ky. Bldg., assoc. archt., Constr. Spring 1961; plans by Walter Scott Roberts & Assocs., 115 E. 4 St., Owensboro, 3 story, 400-bed brick women's dormitory, Western State College, $1,000,000. CD 2/24/55.

▲ **La., Lake Charles**—PLANT—Lake Charles Harbor & Terminal Dist., petroleum coke plant to handle 100,000 tons annually, West Lake. $1,500,000. Elmer E. Shutts, Lake Charles, La., staff engr.

▲† **Mass., Hingham**—STORAGE DEPOT, etc. General Services Admin., General Service Bldg. F between 18 and 19 Sts. N.W., Wash., D. C., plans by Anderson & Nichols Co., archts.-engrs., 150 Causeway, Boston, conversion shop at Navy Ship Yard to storage depot and record center. $2,800,000. Bids in Summer.

▲ **Mass., Lowell** — LABORATORY — Commonwealth of Mass., Dpt. Educ., Lowell Technological Institute, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by W. Chester Browne & Assocs., 184 Boylston St., Boston, Nuclear Testing Laboratory, E-59-5, $5,000,000. Bids in June. CD 7/9/58.

▲ **Minn., Minneapolis**—HOUSING FOR THE ELDERLY—Minneapolis Housing & Redevelopment Auth., 215 Public Health Center Bldg., plans by Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, 352 units housing for the elderly, Site No. 5 and 6, Cedar Ave. to 17 St. between 6 and 7 Sts. $3,520,000. Bids late 1961. CD 11/21.

▲ **Mo., Kansas City**—SCHOOL—Bd. Educ., 1211 McGee, Kansas City, Mo., plans by Marshall & Brown, 1016 Baltimore, Kansas City, Mo., Junior High School, 28th St. Terrace and Hardy. $2,000,000. Bids in Fall CD 5/4/56.

▲ **N. J., Highlands**—SCHOOL—Henry Hudson Regional High School Dist., Navesink Ave., voted at referendum Dec. 22, school, off So. Peak St. $1,295,000. Micklewright & Mountford, E. Stuyvesant, Trenton, archts. CD 11/25.

▲ **N. J., West New York**—HOUSING—West New York Housing Auth., 5814 Park Ave., plans by Ricker & Axt, 6115 Hudson Ave., 100 unit apartment. $1,000,000. Site not selected.

▲ **N. Y., Centereach**—SCHOOL—Bd. Educ. plans by Office of Louis E. Jallade, 597 Fifth Ave., New York, Zone 17, Junior-Senior High School. $1,000,000. Fraioli-Blum-Yesselman, 250 E. 43 St., New York, Zone 17, structural engrs. Wm. P. Henszey, 56 W. 45 St., New York, Zone 36, mechanical engr. Bids late January or early February. CD 3/4.

▲ **N. Y., New Rochelle**—CITY HALL—City, 515 Main St., plans by Fred W. Lyon, 299 North Ave., converting Junior High School into city hall. $2,900,000. Abrams & Moses, 2 Hamilton Ave., mechanical engrs. Fromme & Vosganian, 56 W. 45 St., New York, Zone 36, structural engrs. Bids in February. CD 8/15.

▲† **N. C., Raleigh**—LABORATORY—U. S. Forestry Service, Southeastern Forest Experiment Station, Asheville, forestry research laboratory, Research Triangle, $1,000,000.

▲ **O., Fairfield**—BRANCH CENTER—Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, classrooms and laboratory, Branch Center for Miami University, $1,000,000.

O., Fremont—HIGH SCHOOL—Bd. Educ. plans by Strong, Strong & Strong, 124 S. West St., Lima, high school expansion, $950,000. CD 11/14.

▲ **O., Steubenville**—HOUSING—Steubenville Metropolitan Housing Auth., 1401 Parkview Circle, 300 unit low rent housing, Over $2,000,000. CD 3/17.

▲**O., Warrensville Heights** — SCHOOL — Warrensville Heights Bd. Educ., 4285 Warrensville Center Rd., plans by Fulton, DelaMotta, Larson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, high school. $1,498,450.

▲ **N. Y., New York**—STUDENT RESIDENCE HALLS—New York University, 100 Washington Sq., Zone 12, plans by Harrison & Abramovitz, 630 Fifth Ave., two 9 story student residence halls, block bounded by University Pl., Waverly Pl., Green St. and E. 8 St. Over $4,000,000. Edwards & Hjorth, 67 W. 44 St., Zone 36, structural engrs. Jaros, Baum & Bolles, 415 Lexington Ave., Zone 17, mechanical engrs. Bids June or July 1961. CD 3/18.

▲ **O., Chagrin Falls**—APARTMENTS—Andrew Rosenfield, 5416 Mayfield Rd., Cleveland, Zone 24, plans by Louis J. Rotman, 31715 Vine St., Wickliffe, garden-style apartments, Solon Rd. $1,000,000.

▲ **O., Fairborn**—HOMES—Grant-Holladay Constr. Corp., Commercial Bldg., Dayton, 200 homes, 69 acre site off Dayton-Yellow Springs Rd. $3,000,000.

▲ **O., Mt. Vernon**—HOSPITAL—Martin Memorial Hospital, Mt. Vernon, hospital addn. $1,125,000.

▲ **Pa., Pittsburgh**—MOTOR HOTEL—Leon Falk Jr. & J. S. Wohl, Grant Bldg., plans by Edward B. Stone, 7 E. 67th St., New York, N. Y., and Harry H. Lefkowitz, 345 4th Ave., Pittsburgh, 6 story, motor hotel, garage swimming pool, Washington Pl., Center and 5th Aves. $12,000,000.

COMMERCIAL BUILDINGS

Ala., Birmingham—CLUB—Downtown Club, Essex House, plans by John Davis, Protective Life Bldg., 4 story club, N. 21st St. between 6th and 7th Aves. **$700,000.**

Ala., Cullman—MOTOR HOTEL—Ott & Evelyn Burrow, Rte. 6, plans by Phillip Kessler, 1801 6th Ave. N., Birmingham, motor hotel at intersection of Hy. 31 and 69. **$740,000.**

▲ **Calif., La Puente** — DWELLINGS — Herziger Constr. Corp., 13451 Telegraph Rd., Whittier, plans by Raymond Dean Conwell, 919 Garfield Ave., Los Angeles, 93 frame, stucco dwellings, La Puente District. **$1,250,000.**

▲ **Calif., San Jose**—HOSPITAL—Alexian Brothers Hospital, c/o John Carl Warnecke & Assocs., archts., 111 New Montgomery St., San Francisco, Calif., hospital. **$4,500,000.** To go ahead 1963.

▲ **Conn., Stamford**—OFFICE—100 Broad St. Corp., 550 Summer St., plans by Sternbach & Rheaume, 305 Atlantic Ave., 9 story, 141,228 sq. ft. air conditioned prestressed, pre-cast concrete office, **$2,500,000.** Schupack & Zollman, Summer St., Stamford, Conn., consult engrs. Tizian Assocs., 567 Summer St., mech. engrs. CD 12/13.

▲ **Fla., Miami**—APARTMENTS—Brickell Town House Corp., c/o Steward-Skinner, Assocs., archts., DuPont Plaza Center, two 21 story, steel frame Co-op apartments, Brickell Ave. and SW 25th Rd., **$4,000,000-$5,000,000.** CD 4/15.

▲ **Fla., Palm Beach**—APARTMENT—Owner, c/o Robson & Gesbocker, archts., 937 Belvedere Rd., West Palm Beach, 6 story, 175,000 sq. ft., 96 suites, apartment, incl. air-conditioning. Over **$1,500,000.**

▲ **Ga., Atlanta**—HEADQUARTERS OFFICE—Presbyterian Center, Inc., 341 Ponce De Leon Ave. NE, plans by Ivey & Crook, Candler Bldg., headquarters office, **$1,000,000.** Robert G. Lose, 1309 Candler Bldg., Atlanta, struct. engr. CD 10/17.

▲ **Ga., Gainesville**—SANCTUARY, etc.—First Baptist Church, 105 S. Green St., plans by Bothwell & Nash, 206 Roswell St., Marietta, church sanctuary and educational bldg. **$1,000,000.** Newcomb & Boyd, 1205 Spring St. N. W., Atlanta, Ga., mech. engrs. CD 7/11.

▲ **Ga., Savannah**—CHURCH SANCTUARY, etc.—Calvary Baptist Church, 1601 Barnard St., plans by Hardie Bass, 127 9th Ave. S., Nashville, Tenn., church sanctuary and educational bldg. **$2,000,000.**

▲ **N. J., Bayonne**—SCHOOL FOR BOYS—Archdiocese of Newark, Chancery Office, 33 Mulberry St., Newark, N. J., school for boys. **$3,000,000.**

▲ **N. J., Ho-Ho-Kus**—HIGH SCHOOL—Diocese of Newark, 33 Mulberry St., Newark, high school for 1500 boys. **$3,000,000.** Completion Sept. 1962.

▲ **N. J., Plainfield**—HIGH SCHOOL—Diocese of Newark, 33 Mulberry St., Newark, N. J., high school for 1500 girls. **$3,000,000.**

▲ **N. J., Roselle**—HIGH SCHOOL—Diocese of Newark, 33 Mulberry St., Newark, high school for 1500 boys. **$3,000,000.**

▲ **N. Y., Amherst**—SHOPPING PLAZA—Forest City Enterprises, 16903 St. Clair, Cleveland, O., plans by Lathrop Douglas, 518 T Ave., New York, N. Y., shopping plaza. **$10,000,000.** Leon Selzer, 200 W. 57 St., New York 19, N. Y., structural engr. Bids about March 1961. CD 9/23.

INDUSTRIAL BUILDINGS

▲ **Ill., Chicago**—PARKING GARAGE—Motoramp Garages of Illinois, 38 S. Dearborn St., Zone 3, plans by Fridstein & Fitch, 228 N. LaSalle St., Zone 1, 10 story, 600 car rein.-con. parking garage, southwest corner Clark and Van Buren Sts. **$1,650,000.** Bids in August.

▲ **Ill., Wheeling**—FACTORY—N. Marshall Seeburg & Sons, 919 N. Michigan Ave., Chicago, Zone 11, 35,000 sq. ft. television mfg. factory, Seeburg Industrial Park, **$1,000,000.** Muntz TV, Inc., lessee. Bids early 1961.

N. H. Nashua—LABORATORY ADDN.—Sanders Associates, Inc., 95 Canal St., 50,000 sq. ft. Sanders-Burlington Advance Weapons Systems Laboratory addn., **$750,000.** Constr 1961.

N. Y., New York—PARKING GARAGE—Urban Garage Assocs., c/o Abraham Hirschfeld, 7 E. 47 St., Zone 17, 9 story 64 x 100 ft. 275 car parking garage between 15 and 16 Sts. at Union Square. **$900,000.** Eugene Ho, 136-42 Maple Ave., Flushing, consult. engr. Kinney Corp., lessee. Constr. March 1961.

▲ **Okla., Hennessey**—PLANT—Humble Oil & Refining Co., 1216 Main St., Houston, Tex., natural gas products gasoline plant. **$8,000,000.** Bids in June.

▲ **Tex., Alvin**—PLANT—Monsanto Chemical Co., Lindberg St. and Olive Rd., St. Louis, Mo., chemical plant to produce ethylene, benzene and naphthalene at Chocolate Bayou, near here. **$75,000,000.** CD 4/27.

Tex., Corsicana—HEADQUARTERS OFFICE and STORAGE—Texas Telephone & Telegraph Co., 4001 Westheimer Rd., Houston, headquarters office and storage, Under **$1,550,000.**

▲ **Sask., Saskatoon**—PLANT—Owner, c/o S. G. Fawcett, Industrial Development Officer, City Hall, crushing oil from seed crops and mfg. by-products plant. **$1,700,000.**

For round concrete columns "job-suited" forms mean economy

Men's Dormitory,
Michigan State University,
East Lansing, Michigan.
Contractor: Christman Co.
Architect: Ralph Calder

Use

SONOCO

***Sonotube*®**

FIBRE FORMS

When there are round concrete columns to be formed, SONOTUBE Fibre Forms mean real economy . . . because they are *job-suited*. That is, there are FIVE types available — one to meet virtually any combination of job requirements. *Only Sonoco* offers you this wide choice; you pick the SONOTUBE Fibre Form best suited for the column surface you want and the particular job conditions:

1. For ordinary exposed columns, use Sonoco "A" Coated SONOTUBE Fibre Forms.
2. For extra-smooth finished columns, use Seamless SONOTUBE Fibre Forms.
3. For unfinished or unexposed columns, use "W" Coated SONOTUBE Fibre Forms.
4. For encasing existing posts, piles, utility lines, etc., with concrete, use SONOTUBE Encasement Forms.
5. For columns to be formed in water or excessive dampness, use Special SONOTUBE Fibre Forms.

All SONOTUBE Fibre Forms are low in cost, lightweight, and are easy to handle, place, brace, pour, and strip. For greatest possible speed and economy when forming round concrete columns, order SONOTUBE Fibre Forms . . . in sizes from 2" to 48" I.D., standard 18' lengths or as required. Can be sawed.

See our catalog in Sweet's

For complete information and prices, write

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY, Hartsville, S. C. • La Puente, Calif. • Fremont, Calif. • Montclair, N. J. • Akron, Indiana • Longview, Texas • Atlanta, Ga. • Ravenna, Ohio • Brantford, Ont. • Mexico, D. F. 5423

TURN TO FULL-POWER STEERING

Only Allis-Chalmers all-hydraulic motor scrapers give you full-power steering . . . give you more steering power at full 90-degree position than others can muster straight ahead!

Here's why! Every Allis-Chalmers motor scraper has:

. . . An independent hydraulic system *just for steering*

. . . *Double-acting* steering jacks

. . . Positive leverage "never-over-center" linkage design

These three advantages enable every Allis-Chalmers motor scraper to *recover faster from full 90-degree turns than any other motor scraper.* In addition, *two-stage steering* control provides fast, non-stop turns with only a 1/6 turn of the steering wheel. A slight turn of the wheel gives you responsive steering for steady, accurate handling at high haul road speeds.

For everything you want in big-production motor scrapers, turn to *full-power steering—double-acting bowl jacks—highest apron lift* and *forced ejection*—KON-TORK *differential* . . . good reasons why you can tackle any size job and be confident of top-notch production. When you put any Allis-Chalmers motor scraper in your spread—from 155 to 340 hp . . . 10 to 30 yd—you'll *see* the difference *on the fill.* Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.

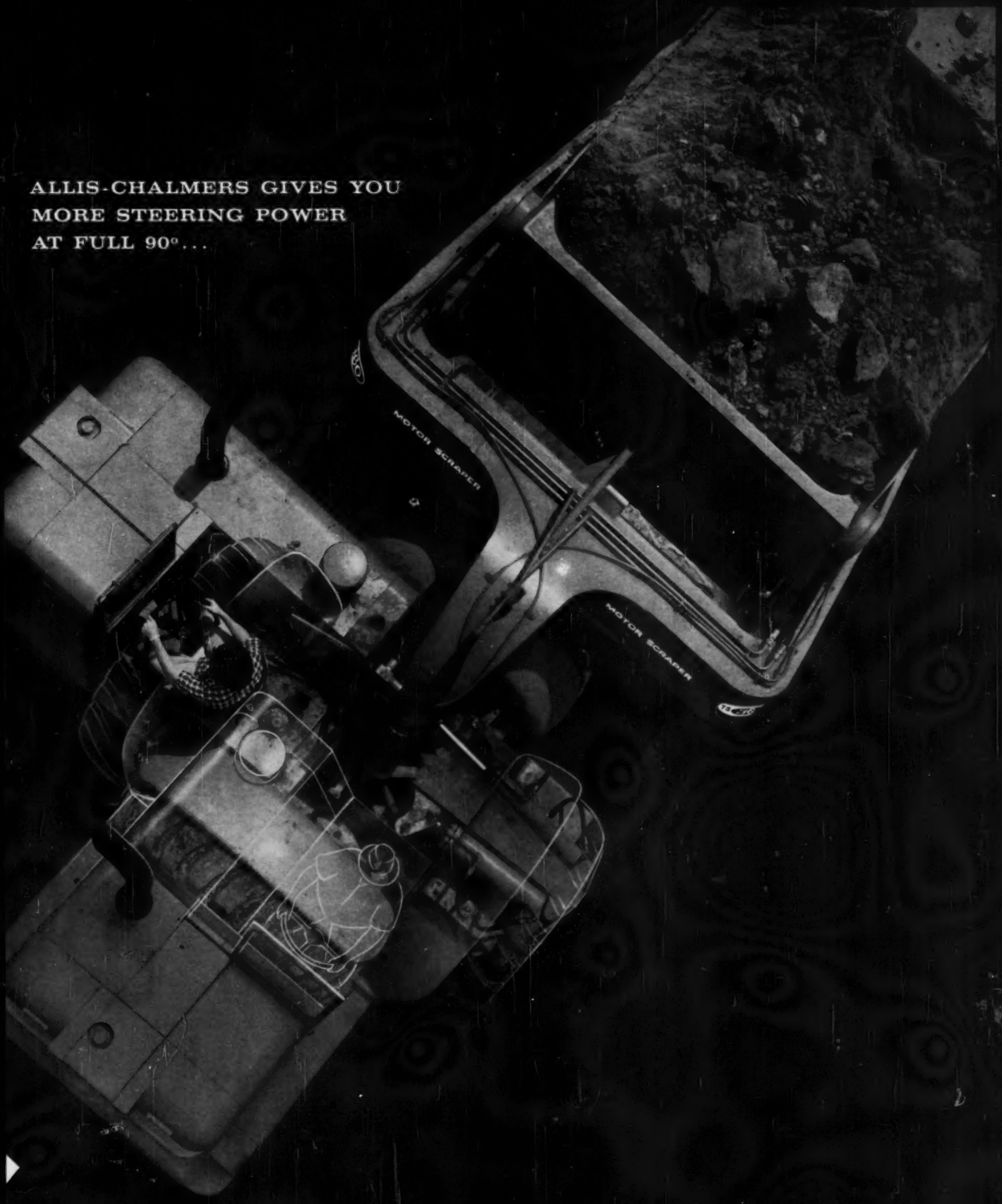
KON-TORK is an Allis-Chalmers trademark.

move ahead with

ALLIS-CHALMERS

. . . power for a growing world

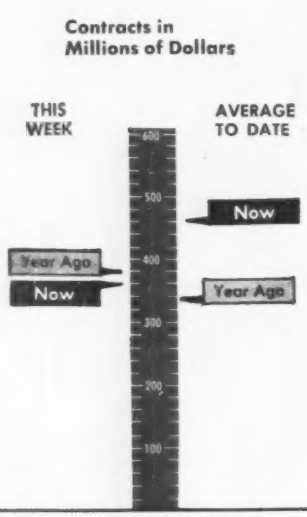
ALLIS-CHALMERS GIVES YOU
MORE STEERING POWER
AT FULL 90°...



...THAN OTHERS DO STRAIGHT AHEAD

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

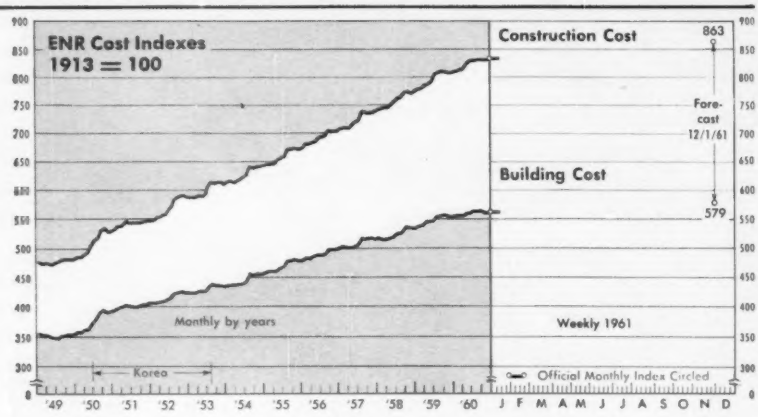
Contracts Awarded In 50 States By Type	This Week	Cum. 3 wks 1961	Chge '60-'61 %
	millions		
All Heavy Construction	$359.8	$1,391.4	+36
By Ownership			
PRIVATE	174.4	655.9	+24
PUBLIC	185.4	735.5	+50
State & Municipal	156.6	554.1	+65
Federal	28.8	181.4	+19
By Type of Work			
PUBLIC			
Waterworks	1.6	16.6	+13
Sewerage	7.8	30.3	−16
Bridges*	5.8	35.8	− 8
Highways	98.3	314.3	+148
Earthwork, Dams & Waterways	13.3	39.5	−20
Buildings:			
Excl. Housing	35.9	213.0	+190
Housing	4.8	26.0	−43
Unclassified	17.9	60.1	−43
PRIVATE			
Buildings:			
Mass Housing	80.2	218.0	+ 6
Commercial	47.9	114.6	−18
Industrial	38.7	299.5	+93
Unclassified	7.6	23.7	−17

* Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

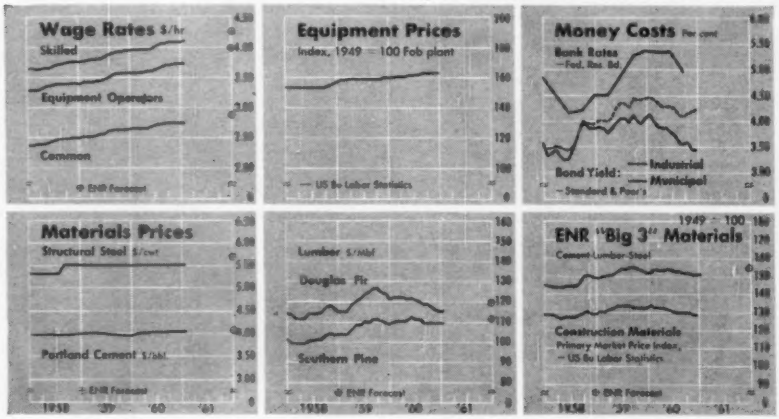
NEW CONSTRUCTION CAPITAL

	Week of Jan. 12	Cum. 2 wks 1961	Chge '60-'61 %
	millions		
Corporate Securities	$36.5	$36.8	−26
State and Municipal:			
All Except Housing	70.2	112.7	−70
Housing	0.4	0.4	−33
Federal Loans	19.5	24.8	+1450
Federal Aid	0.0	0.0	0
Total Nonfederal	$126.5	$174.8	−59
Federal Appropriations:			
Projects in U. S.	0.0	0.0	0
Outside U. S.	0.0	0.0	0
Total New Capital	$126.5	$174.8	−59


ENR Cost Indexes 1913 = 100
Construction Cost
863
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60
J F M A M J J A S O N D

ENR INDEXES (1913=100), 20 cities' average	Week of Jan. 12 1961	% Change from Dec. 15 1960	% Change from Jan. 14 1960
Construction Cost	834.49	+0.5	+2.8
Building Cost	563.08	+0.3	+1.6

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



ENR COST INDEXES IN 22 CITIES, 1913=100

City	Construction Cost 1961	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost 1961	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	652.78	0	+2.2	504.08	0	+0.6
Baltimore	754.18	+0.1	+1.4	560.02	+0.2	+0.6
Birmingham	674.37	0	+3.4	525.80	0	+1.9
Boston	850.28	+0.2	+2.7	573.85	+0.3	+2.6
Chicago	911.09	0	−1.1	586.15	0	+0.4
Cincinnati	838.40	−0.1	+3.0	544.18	−0.2	+0.9
Cleveland	944.49	0	+2.5	561.64	0	+1.5
Dallas	640.32	0	+6.0	526.20	+0.2	+7.1
Denver	756.22	0	+1.3	553.43	+0.2	+1.6
Detroit	963.54	0	+2.2	605.32	0	+1.5
Kansas City	812.88	+0.04	+1.8	553.43	+0.05	+0.1
Los Angeles	900.59	0	+3.7	561.09	0	+1.3
Minneapolis	897.84	+1.5	+4.4	575.71	0	+1.1
New Orleans	654.27	+0.8	+2.0	507.84	0	−0.6
New York	1,055.71	+1.9	+4.2	659.87	+2.2	+1.9
Philadelphia	830.49	0	+5.0	589.86	0	+2.1
Pittsburgh	885.14	0	+2.7	625.80	0	+4.2
St. Louis	900.86	+0.03	+2.6	581.55	+0.9	+0.8
San Francisco	877.73	+0.2	+2.9	554.94	+0.3	+0.4
Seattle	882.90	+3.5	+2.5	507.31	+0.7	+0.6
U. S.—20 Cities' avg.	**834.32**	**+0.4**	**+2.8**	**562.91**	**+0.3**	**+1.5**
Montreal	648.79	0	+3.0	464.48	0	+1.2
Toronto	689.98	0	+3.4	492.11	0	+0.6

Here's an idea that could be . . .

Insulation for the Housing Market

The National Mineral Wool Insulation Association, in a burst of imaginative thinking, is pushing an idea that would raise the unit cost of housing but nevertheless increase the size of the housing market by 5%.

This apparent contradiction is the result of arithmetic applied to the pecularities of mortgage financing and home ownership. The organization, in cooperation with the National Association of Home Builders, developed a new heating index that shows how much money can be saved in home operating costs when a builder installs more insulation than is required by the Minimum Property Standards of the Federal Housing Administration.

The principle has the indirect endorsement of FHA, because the association's brain-child is hung on a hook made and installed by that governmental agency about one year ago. The hook is FHA's Housing Expense Data Letter No. 1789 of last January, which says: "It is particularly important to recognize the effect which exterior wall material, insulation, double glazing and other construction features may have on annual heating and cooling costs. . . . In many cases the increase in mortgage amount necessary to finance the extra (initial) cost will involve additional debt service, which is only a fraction of the saving in maintenance cost and operating expense."

With this as their launching pad, NMWIA and NAHB engineers developed a heating index that permits determination of any one of the three following effects per 1,000 sq ft of floor area:

- Reduction in monthly housing expense.
- Possible reduction in annual income without lowering the FHA rating of a buyer's ability to pay.
- Increase in mortgage that can be supported by savings in operating expense.

Formula for determining the Heating Index: the number of heating degree days multiplied by fuel cost per 100,000 Btu, divided by heating equipment efficiency.

The chart at right can be used to show how a builder could reach more prospective buyers by insulating to ceiling and wall "U" values of .07 and .09 respectively. These values are above FHA minimum property standards on a national average.

A builder plans to sell a 1,000 sq ft house at $14,300 using insulation to the minimum "U" value required by FHA. By using more insulation to achieve ceiling and wall "U" factors of .07 and .09 and thereby a Heating Index of 730, the selling price would be boosted by $80. This would actually increase the mortgage required by $100, as mortgages are raised in amounts of $50. This would boost the required down payment by about $9 and the monthly payment on the mortgage by approximately 53 cents.

But the monthly reduction in fuel costs resulting from the use of more insulation would amount to $2.83, or a net reduction in monthly housing operating costs of $2.30. Under FHA guidelines, this would mean a possible reduction in required annual income after taxes of $200. This could mean that after-tax income needed to qualify as the buyer of the house would be $7,100 instead of $7,300.

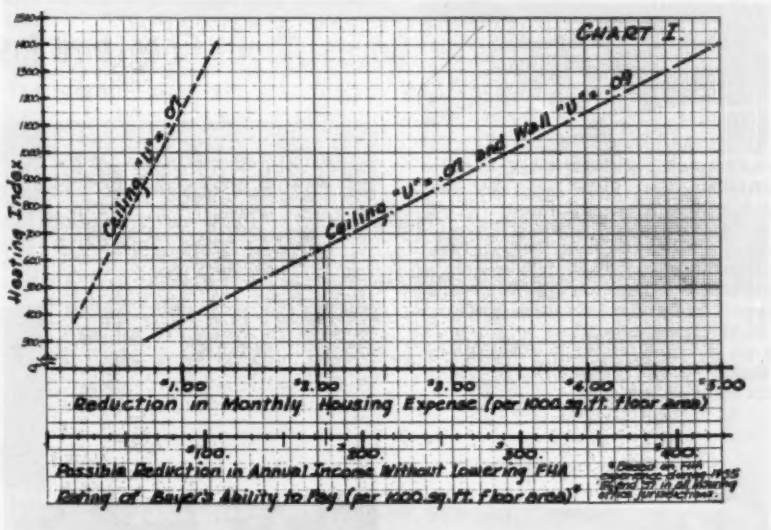
In another case, as shown on the chart, a Heating Index of 650 would result in a reduction in monthly housing expense of $2.06 and a possible reduction of annual income of $176.

The figures, although small on the surface, are not to be taken lightly, considering that among recent suggestions to broaden the market is one that would shave the present annual mortgage insurance premium from its present one-half of 1% to ¼ of 1%.

Robinson Newcomb, construction economist, says, "After allowing for such things as the influence of areas south of the Mason-Dixon line, the number of customers without money problems and the number who may do some of their own building, it may be a reasonable estimate to say that adjustments for maintenance and operating savings of the sort suggested may add over 5% to the housing market."

Mr. Newcomb bases his prediction on the breakdown of the population's age groups and trends. He sees the 25-29 and the 55-and-over groups as the main potential buying brackets until 1965. Persons of these ages want the smaller, cheaper houses, so it is this market that builders must cater to if big volume is to be achieved, Mr. Newcomb believes.

NMWIA is now preparing the indexes for about 50 cities where weather conditions make insulation a major component of construction. These will be sent to FHA offices around the country for reference and application.

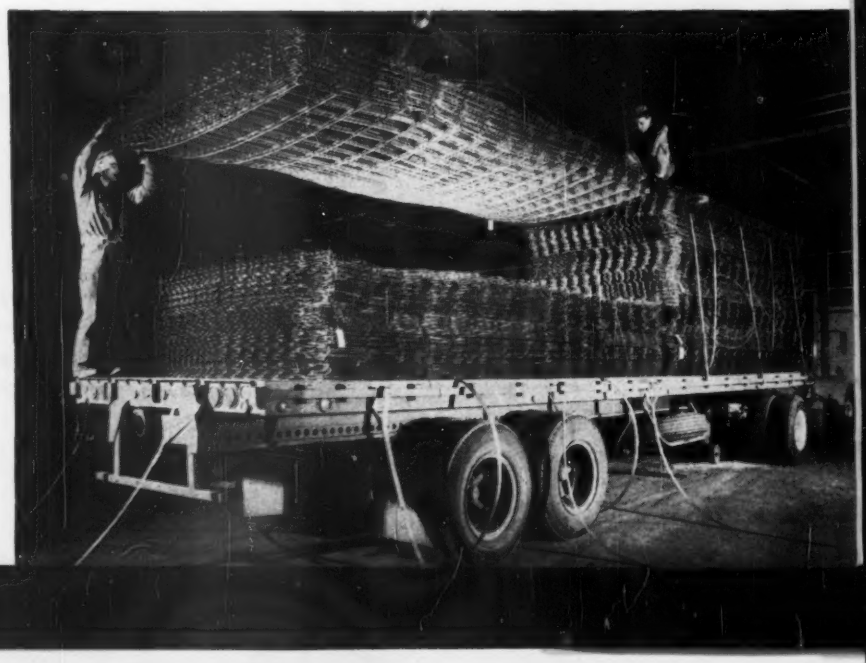


HEATING INDEX developed by insulation group is applied here to show how much less income buyer needs to carry FHA-finance house insulated above standard.

New Hinged Road Fabric from Pittsburgh Steel folds in slightly more than half the fabric's full width. Here in Glens Falls, N.Y., where Torrington Construction Co. of Connecticut is building a 14-mile strip of the $275-million Northway, Job Superintendent Patrick J. DiNatale shows how new fabric folds along hinge running length of the sheet.

Pittsburgh Steel's New Hinged Road Fabric Big Success On New York State's Northway

Contractor Saves About One-Third Installation Time



Ready to go at Pittsburgh Steel's Monessen, Pa., plant is a flat-bed truck loaded with new Hinged Road Fabric. Ordinary road fabric requires special cradling equipment and extra handling. Not so with Pittsburgh Steel's new Hinged Road Fabric: it's shipped folded flat and in weights up to 40,000 pounds per truck (depending on size and style), twice that of ordinary fabric. Shipments to Glens Falls took only a day.

A revolutionary new road fabric from Pittsburgh Steel Company simplifies shipping, speeds handling and cuts installation time on roadbuilding jobs by as much as one third.

The new product, called Hinged Road Fabric, provides the steel backbone for a 14-mile strip of New York State's gigantic, $275-million Northway linking Albany with Canada.

Hinged Road Fabric features an off-center hinge running lengthwise on each section. Roadbuilders using this product—one of several being introduced by Pittsburgh Steel—cite its built-in benefits during:

• **Shipping**—Because Hinged Road Fabric's novel hinge permits folding in slightly more than half the fabric's full width, it can be stacked easily within the eight-foot width limit of a truck bed or gondola. This makes special cradle trucks and cradling equipment unnecessary.

As a result, trucks can be loaded to capacity (subject to state weight restrictions)—up to twice the weight possible with ordinary fabric.

• **Handling**—A single section of Pittsburgh Steel Hinged Road Fabric can be handled easily by two men instead of the four usually required for unwieldy ordinary sheets.

• **Installing**—Because the sheet is not bent during shipping and stacking, new Hinged Road Fabric lies flat when installed.

At Glens Falls, N.Y., where 800 tons of Hinged Road Fabric were installed on the four-lane, 175-mile Northway, Torrington Construction Co.'s veteran roadbuilders added their stamp of approval.

Patrick J. DiNatale, the Connecticut firm's job superintendent, was especially enthusiastic about the one-day service on Hinged Road Fabric truck shipments from Pittsburgh Steel's Monessen, Pa., plant.

"We get terrific service from Pittsburgh Steel," said Mr. DiNatale. "It takes just one day for a shipment to get here.

"Ordinary fabric usually takes a week to ten days to arrive because it's handled by truck, rail and then truck again. That's because many counties and cities won't permit trucks with overhanging loads to pass through.

"Pittsburgh Steel's fabric is handled only once—and in one day in loads up to 40,000 pounds, not 20,000."

Torrington's field engineer, Robert B. Cunningham, is enthusiastic about Hinged Road Fabric's fast, easy handling. He said:

"I estimate that at the end of a working day this Pittsburgh Steel fabric saves us about one-third the installation time required with ordinary fabric."

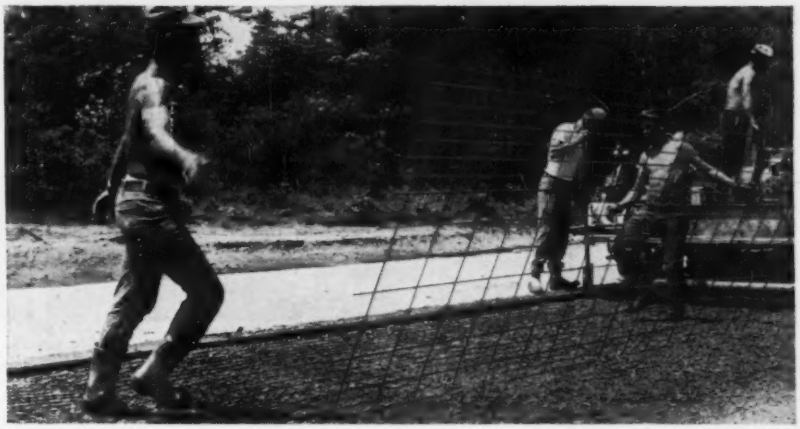
The man directly in charge of the fabric's installation—Paving Foreman John Picciocca who has worked with all brands of road fabric for the last 12 years—had this to say:

"What really sold me on Hinged Road Fabric is that it doesn't poke through the concrete while it's taking a set. That's a big problem with ordinary fabric. When that happens, you either have to cut the wire or repave the spot to cover the wire. That's murder on costs."

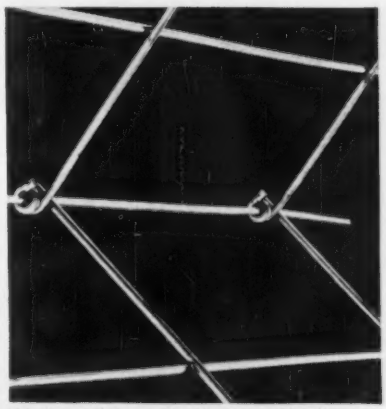
If you're in the roadbuilding business, you'll be dollars ahead—like Torrington—when you let Hinged Road Fabric provide fast, economical reinforcement on your next job.

Contact your nearest Pittsburgh Steel Products sales office listed here.

On the job in Glens Falls, N.Y., a section of Hinged Road Fabric is handled easily and quickly by just two men.



Down goes Hinged Road Fabric in just seconds—and as flat as a living room rug.



Unique hinge is the result of two years' development work.

Hinged Road Fabric

Patents applied for

Pittsburgh Steel Products

a division of Pittsburgh Steel Company

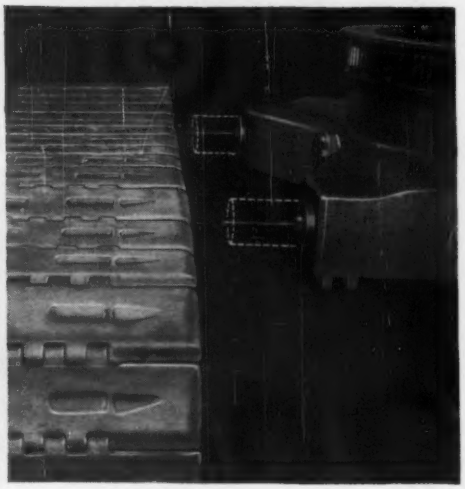
Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES

Atlanta	Cleveland	Detroit	Los Angeles	Pittsburgh
Chicago	Dayton	Houston	New York	Tulsa
			Philadelphia	Warren, Ohio

Steel

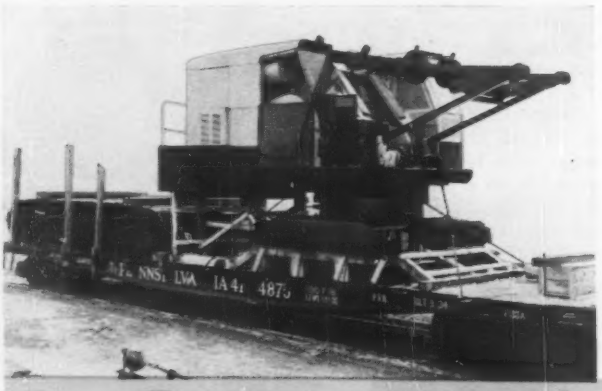
New 80-ton crane features faster, simpler removal of side frames for easier shipping



The new Lorain 880 Crane has long, wide, heavy crawlers with an all-new way to remove side frames. Unique telescopic axles actually *slide out* of the frames . . . instead of frames being dragged off axles. The *complete* frames are then quickly lifted to car or truck.

A jaw clutch between the chain drive sprocket and the horizontal propelling shaft enables the side frame to be removed without "breaking" the tread belt or the drive chain. It all comes off in one piece—and goes back the same way.

Easy transportation. The superstructure rests on blocking on car or truck. For fast reassembly, the "880" easily swings the assembled side frames and treads into position so that the slide stub axles may be pulled into them.



Plus other output boosting features. Simultaneous boom derricking or lowering with hoist and/or swing. Square-Tubular-Chord Boom with open-throat boom head to eliminate block fouling. "Joy-Stick" air-power turntable controls. Air-power crawler controls. "Shear-Ball"® turntable connection is warranted for 10 years. Three tread widths: 34″, 44″, and 48″.

These outstanding features are also available on the 70-ton Model 870 crane, clamshell or dragline.

The Thew Shovel Company, Lorain, Ohio

LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, draglines, clamshells, and hoes from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

NLRB Must Decide Jurisdiction

- **Supreme Court ruling reverses Labor Board policy of noninterference in work assignments.**
- **It remains to be seen whether the decision aids or hampers construction's voluntary machinery.**

The present procedures for handling jurisdictional disputes were tightened up by the U.S. Supreme Court last week.

The court ruled in a unanimous decision that the National Labor Relations Board does have the "responsibility and duty to decide which of two or more employee groups claiming the right to perform certain work tasks is right and then specifically to award such tasks in accordance with its decision."

For the construction industry, the decision means that whenever the National Joint Board for the Settlement of Jurisdictional Disputes is circumvented or fails to settle or end a specific dispute, the NLRB, if requested, must step in and decide the dispute on its merits.

The ruling reverses a 12-year-old labor board policy of noninterference in the actual settlement of jurisdictional disputes.

What the NLRB has done in the past under its "hands-off" policy is merely determine whether the offending union has any claim to the disputed work under an NLRB order or certification and, if not, to issue a cease and desist order. It has never decided a dispute on its merits.

The decision was handed down in a case involving a Columbia Broadcasting System dispute between television technicians and stage employees over the work of providing electric lighting for television shows. Justice Hugo L. Black wrote the opinion.

One of the possible results of the ruling is that a union may be encouraged to ignore an adverse decision from the National Joint Board in the hope of getting a favorable ruling from the NLRB. Some industry spokesmen consider this a real possibility, particularly where a dispute involves a contractor who deals with a single union.

The court said it was aware of the fact that the decision could militate against the voluntary settlement of disputes but indicated that under the mandate of Congress it would have to let the chips fall where they may.

The compelling reason for making the NLRB take positive and affirmative action, the court said, is that the law has no meaning in the absence of such action.

By outlawing jurisdictional disputes, the court explained, Congress intended that the labor board would "hear and determine" disputes in order to give employers relief from the wasteful work stoppages that flow from such disputes. Unless the board takes the final step of adjudication, the court said, a particular dispute may never be solved. The NLRB can halt strikes, the court noted, but unions would still be free to use other pressures, leaving employers the "helpless victims of disputes that do not concern them at all."

The new decision makes no change in the present law that the NLRB must give voluntary settlement machinery, if available, a chance to work before entering a dispute with a Section 10 hearing. Its effect, however, is to fill the gap that has always existed in the construction industry, for example, when a contractor has refused to use the National Joint Board, or when the Joint Board machinery, which has no enforcement power, has failed to work. In those instances, the real problem has never been solved because the ultimate authority—the NLRB—has always refused to get into the merits of a dispute.

One of the big questions raised by the new decision is whether it will undermine the National Joint Board and pave the way for upsetting its long line of work assignment decisions for the construction industry.

Knowledgeable members of the industry in Washington, D.C., told ENR last week that they think it will strengthen rather than weaken the Joint Board.

They feel that the decision will encourage contractors to use the voluntary procedures of the Joint Board, which is a creature of the industry, rather than risk having "economists or politicians or other outsiders" on the NLRB make work assignments for the industry.

And they foresee the possibility of little damage even where disputes do go the the labor board for final determination. They point to one part of the Supreme Court decision in which Justice Black assumes that the NLRB will draw on industry "experience and knowledge" in deciding disputes. The NLRB has cooperated with the Joint Board in the past and it can be expected to do so in the future, one industry spokesman feels, even to the extent of using Joint Board members as expert witness and of following the Joint Board line of decisions.

As a practical matter, these expectations seem to be reasonable. One government official had this comment: "There are 8,000 jurisdictional disputes referred to the NLRB a year. The decision will give the board some real headaches." An obvious way of easing the burden in construction cases is to draw heavily on the Joint Board's experience.

Jurisdictional Dispute Settled at Ford Project

A jurisdictional dispute between a building trades union and a railroad union over whose members should work on railroad spur construction disrupted a Ford Motor Co. construction project for two weeks last month.

The stage was set for the dispute when Ford let two contracts—one to a Cleveland contractor for construction of a loading dock and a new building at the Lorain plant, and one to the New York Central Railroad for a spur from its right-of-way to the new loading dock.

A local of the laborers union objected to the fact that construction of the spur, which is on Ford property, was being done by members of the Brotherhood of Railroad Trainmen. It picketed the entrance to the project, and the picket line was honored by teamsters delivering materials to the dock project.

Ford filed an unfair labor practice charge against the laborers, and initial steps were taken for an injunction.

The case was settled with no gain to the laborers. The union agreed to withdraw the pickets with the understanding that it neither admitted nor acknowledged any violation of law.

A union official said the jurisdictional issue was of interest to all building trades but that the other local unions were in "no position to give more than moral support."

More Labor Curbs?

Conservatives want tighter controls on unions

Radical changes in a number of fundamental union practices have been recommended by a group of conservative Republicans who have drafted a statement of general principles apparently designed to promote the political future of Sen. Barry Goldwater of Arizona.

The general tone of the labor portion of the statement is that organized labor should be cut down to size by being forced to match the privileges it enjoys with new obligations and restrictions. Avowed purpose of the labor proposals is to protect the "forgotten Americans"—the people in and out of the labor movement whose defenses against the mechanics of unionism are weak.

Without mentioning the tight unions of skilled workers, such as the building trades, by name, the statement recommends that unions be compelled to drop their "exclusionary policies" and open up their now-monopolistic membership to all "qualified workers who wish to join." This is considered one of the prices that unions—particularly those in which the hiring hall flourishes—should pay for the price of the "unique and precious privilege of exclusive representation in collective bargaining." This approach, of course, would apply to apprenticeship as well.

Although the report urges a rollback in government activity in most areas, it would increase the workload of the Labor and Justice Departments and of the National Labor Relations Board in an effort to accomplish these four objectives:

- Banning the use of union funds for political action—what the authors of the statement call "political blackmail."
- Forcing "an appropriate federal official or agency" to sue on behalf of union members who feel that their union rights under the Landrum-Griffin law's "Bill of Rights" have been violated.
- Making all strikes illegal in the absence of a 30-day notice to strike, and forcing the NLRB to conduct a secret strike vote on the petition of 30% of the workers, both union and nonunion, in "the establishment to be struck."
- Enactment of a new "federal law and the exercise of federal power" to eliminate violence of any kind in labor disputes and to permit anyone who wishes to work free access to struck premises.

OFFICIAL PROPOSALS

Bids: February 16, 1961

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract GWB-190.032—George Washington Bridge—Lower Level Expansion—New Jersey Approach—Toll Booths and Canopies—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, February 16, 1961.

Contract EP-110.007 — Elizabeth-Port Authority Piers—Terminal Street Extension—Phase I—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, February 16, 1961.

Contract TA-290.001—Teterboro Airport — Police Training Facility — Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, February 16, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115 where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents,, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, January 19, 1961

Bids: February 7, 1961

St. Lawrence Power Project

POWER AUTHORITY OF THE STATE STATE OF NEW YORK
ADVERTISEMENTS FOR PROPOSALS FOR
PLANTING AND REPLANTING OF SPECIMEN TREES, SHRUBS, AND GROUND COVER PLANTS DURING 1961 IN CONSTRUCTION AREAS AND STATE PARK NEAR MASSENA
ST. LAWRENCE COUNTY, NEW YORK
ST. LAWRENCE CONTRACT NO. 61
SPECIFICATION NO. PA-5-11059

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for Planting and Replanting of Specimen Trees, Shurbs and Ground Cover Plants during 1961 in Construction Areas and State Park, near Massena, St. Lawrence County, New York, until 10:30 A.M. Eastern Standard Time on the 7th day of February, 1961, at the Authority's Office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:

Estimated:

96 trees	Planting "Authority-furnished" specimen deciduous trees
1,530 trees	Furnishing and planting specimen deciduous trees
784 trees	Furnishing and planting specimen evergreen trees
4,400 shrubs	Planting "Authority-furnished" deciduous shrubs
3,951 shrubs	Furnishing and planting deciduous shrubs
10,000 plants	Planting "Authority-furnished" ground cover plants
2,000 plants	Furnishing and planting ground cover plants
6 acres	Grading, topsoiling and seeding

All scheduled planting shall be completed on or before June 30, 1961. All work shall be completed on or before June 30, 1962.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: January 26, 1961

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 26th day of January 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York		
Nassau & Suffolk	OP-61-1	Ocean Parkway (Tobay Beach to Gilgo State Park)

Miles	Type	Deposit	Estimated Cost of Work
3.83	Highway Slope Protection	$40,000 Plans $5	$731,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: January 26, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Canal Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 26th day of January 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; N. P. Ronan, Act. District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rtes 23, 145)	TS 61-6	Cairo-Windham, Pt. 1, S.H. 5233; Cooksburg-Cairo, Pt. 3, S.H. 8413; South Cairo-Cairo, S.H. 887; Cairo Hamlet, S.H. 954	3.02 (0.62 Acc.)	Traffic Signs	$1,300 Plans $5	$23,000
Saratoga (Int. Trg. Rte. 87)	FISH 61-2	Interstate Route 502 (Lake Elizabeth to South Glens Falls) Project I-87-3(40)	7.12 (3.35 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var.= 7.10; Misc. Work = 0.02; Access = 0.80 Mi. Asph. Conc.; 1.87 Mi. Surf. Treatment; 0.68 Mi. Cem. Conc. Pavt. (Ramps) 3 H.G.S. Composite WF Beam Bridges 6 Spans 304' Total; 6 Spans 316.7' Total; 6 Spans 325.2' Total	$250,000 Plans $10	4,429,000
Saratoga (Int. Trg. Rte. 87)	FITS 61-3	Interstate Route 502 Clifton Park to Malta Project I-87-3(38)	9.28 (1.32 Acc.)	Traffic Signs	$3,500 Plans $5	61,000
Schenectady (Int. Trg. Rte. 890)	FIC 61-1	Int. Rte. Conn. 550: City of Schenectady (Edison Ave. to Broadway) Project I-IG-890-5(17)	0.30	Demolition of Buildings	$1,900 Plans $5	34,000
Warren (Int. Trg. Rte. 87)	FISH 61-3	Interstate Route 502 (Gurney Lane to Luserne Road) Project I-87-3(37)	3.57 (3.28 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var.= 3.24 Mi.; Misc. Work = 0.33 Mi.; Access = 1.47 Mi. Cem. Conc. Pavt.; 0.38 Mi. Asph. Conc.; 1.43 Mi. Bit. Treat. Fdt. Crse.; 2 HGS Composite WF Beam Bridges 3 Spans 159' Total; 3 Spans 213' Total	$161,000 Plans $5	2,911,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Orleans	M 61-3	Canal Bridge E-189 Over Erie Barge Canal at Tuttles	....	Cleaning and Painting Superstructure	$160 Plans $5	2,700
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17)	R.C. 61-10	Falconer Village, S.H. 5067	0.98	Asphalt Concrete Type 2A	$22,000 Plans $5	386,000
Chautauqua (Rte. 60)	R.C. 61-8	Fentonville-Frewsburg, S.H. 8139	4.26	Asphalt Concrete	$16,000 Plans $5	290,000
Chautauqua (Int. Tr. Rte. 90)	FITATS 61-1	Int. Route 504, NYS Thruway, Erie Section Sub E-1A (Shortman Road Interchange) Project I-90-1(34)	1.42	Traffic Signs	$350 Plans $5	9,500
Erie (Rte. 5)	FAC 61-4	City of Buffalo: Fuhrmann Blvd. Art. Hwy. Cont. 1, (Tifft Street to Buffalo Skyway) Project U-750(21)	1.69 (1.14 Acc.)	Grading & Drainage = 1.49 Mi.; Misc. Work = 0.20 Mi.; Asph. Conc. Type 2A (Access) = 1.14 Mi.	$80,000 Plans $5	1,617,000
Erie (Rte. 5)	FAC 61-2	Hamburg Turnpike; City of Lackawanna Project U-750(22)	0.02	Pedestrian Overpass I-Beam—100' Span, Rein. Conc. Ramps—146'	$5,000 Plans $5	90,000
Erie (Rte. 5)	FATS 61-1	Lake Shore-Lackawanna City, S.H. 5019 (Mile Strip Road Interchange) Project U-750(23)	0.68 (1.60 Acc.)	Traffic Signs	$450 Plans $5	8,000
Erie (Int. Rtes. 90 & 190)	FINYST 61-1	New York State Thruway Int. Rte. 504—Ontario Section —Sub. 11 & 12 (William St.-Cleveland Drive) Int. Rte. 506—Niagara Section—Sub. N1, 2, 3, 5, 6, 7, 8 (Ontario Sect.-Niagara Toll Plaza) Project I-90-1(35); I-190-1(36)	26.06	Beam Type Guide Railing Chain Link Fencing Cattle Wire Fencing	$14,000 Plans $5	257,000
DISTRICT No. 6, Wm. J. Dennis, District Engineer, State Office Bldg., 30 West Street, Hornell, New York						
Chemung (Rte. 328)	FARC 61-4	Southport Pt. 2, S.H. 28 Southport Pt. 1, S.H. 13 Project U-F-1122(2)	3.66	Asphalt Concrete = 3.29 Mi.; Misc. Work = 0.37 Mi. 2 H.G.S. Comp. I Beam Bridges 1 Span @ 62.4', 1 Span @ 66.4'	$110,000 Plans $5	2,052,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 444 Van Duzee St., Watertown, New York						
Clinton (Rte. 22)	DARC 61-1	Mooers Village, S.H. 930 Project RAD-13(2)	0.03	Alterations to Bridge No. 1 (Missile Route)	$450 Plans $5	8,000
Clinton (Rte. 191)	FARC 61-7	Chazy-Chazy Landing; Obers Cors. Scotia, S.H. 433 Project S-561(2)	0.22	Asphalt Conc., Type 1A = 0.19 Mi. Miscellaneous Work = 0.03 Mi.	$2,500 Plans $5	43,000
Jefferson (Int. Tr. (Rte. 81)	FITS 61-4	Int. Route 505: Section 7AB-2, FISH 59-16 (Pierrepont Manor to Adams: Section 7AB-3, FISH 57-21 (Adams-Adams Center) Project I-81-3(19)	7.08 (2.36 Acc.)	Traffic Signs	$1,100 Plans $5	21,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York						
Westchester (Rte. 134)	FARC 61-3	Ossining-Kitchawan, S.H. 768 Project S-575(1)	2.38	Asphalt Concrete = 2.23 Mi. Misc. Work = 0.15 Mi.	$55,000 Plans $5	983,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17)	TS 61-5	Windsor-Deposit, S.H. 5338; Binghamton-Windsor, Pt. 4, S.H. 5241; Binghamton-Windsor, Pt. 3, S.H. 5148; Windsor Village-Main St. S.H. 1239	6.31 (2.70 Acc.)	Traffic Signs and Delineators	$1,200 Plans $5	22,000
Broome	FICR 61-1	Interstate Route 505 Five Mile Point to Broad Ave. Project I-81-1(8)8	....	Cemetery Removal	$7,000 Plans $5	123,200
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
New York (Int. Tr. Rte. 78)	FILME 61-1	Interstate Route Conn. 513 Lower Manhattan Expressway (Expressway Structure Under Chrystie Street) (Contract No. 1) Project I-78-1(43)	0.03	Abutments, Piers and Miscellaneous Work to Support Subway Structure Across Depressed Expressway	$63,000 Plans $5	1,148,000
Suffolk	FASH 61-1	Sunrise Highway Extension (Upton Blvd. to Eastport Manor Road) Project F-947(24)	7.41 (11.74 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' = 7.23 Mi.; Misc. Work = 0.18 Mi.; Acc. 9" Cem. Conc. 15' & Var.= 1.40 Mi. Asphalt Concrete = 10.34 Mi.; 8 H.G. Seps Comp. Steel Beam, 1—3 Spans 99'; 6—4 Spans 236', 206', 229', 223', 210', 216', 1—4 Span Twin 281' and 273'	$450,000 Plans $10	7,760,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5481) will be received at Farmington, New Mexico, until 10 a.m., Mountain Standard Time, February 23, 1961, for furnishing labor and materials for Earthwork and Structures, Hammond Diversion Dam and Main Canal, Station 38+96.35 to Station 44+50, Hammond Participating Project, Colorado River Storage Project. Location near Farmington, New Mexico. Principal items are 46,200 cu. yds. of excavation; 1,600 cu. yds. concrete; Furnishing and installing 4 radial gates and a cast-iron slide gate; and other work. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; P. O. Box 28, Farmington, New Mexico; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5475) will be received at Vernal, Utah, until 2 p.m., Mountain Standard Time, February 28, 1961, for furnishing labor and materials for Flaming Gorge-Vernal-Rangely 138 Kilovolt Transmission Line, Transmission Division, Utah-Colorado, Colorado River Storage Project. Location from Flaming Gorge Dam (Dutch John, Utah) to Vernal, Utah, then to Rangely, Colorado. Principal items are Construction of approximately 85 miles of 138-kilovolt wood-pole transmission line; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; Dutch John, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5476) will be received at Vernal, Utah, until 2 p.m., Mountain Standard Time, February 28, 1961, for furnishing labor and materials for Rangely-Oak Creek and Kremmling-Green Mountain 115-kilovolt Transmission Lines and Kremmling-Gore Tap 69-kilovolt Transmission Line, Transmission Division, Colorado, Colorado River Storage Project. Location in Rio Blanco, Moffat, Routt and Grand Counties, Colorado. Principal items are Construtcion of approximately 125 miles of 115-kilovolt, wood-pole, transmission line; and approximately 8.3 miles of 69-kilovolt, wood-pole transmission line; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; Dutch John, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: February 15, 1961

Comision Ejecutiva Hidroelectrica Del Rio Lempa El Salvador, Central America

Application for prequalification of bidders for the General Construction of Guajoyo Hydroelectric Project will be received not later than February 15, 1961.

This project is located in northwestern El Salvador, Central America, approximately 55 kilometers north by west of San Salvador.

The principal items of construction are:

Rock excavation	92,000 m³
Unclassed excavation	50,000 m³
Concrete	10,400 m³
Reinforcing steel	500,000 kg
Other steel, including steel liners and stiff-leg derrick	236,000 kg
Erection of 15,000 kw turbine and generator	
Miscellaneous equipment, piping, control cables, electrical earthing conductors, etc.	

Applicants for prequalification must submit the following information:

1. List of similar completed work with dates, total amount of contract and reference from clients.
2. List of equipment available for the work and ownership of same.
3. Statement of financial resources.
4. Banking references.
5. Qualifications and experience records of the personnel.
6. Other information by which fitness to submit a proposal can be judged.

All prequalification information must be sent to Harza Engineering Company, 400 West Madison Street, Chicago 6, Illinois, USA, the Engineers for the project.

Payment for foreign expenditures for the construction of the project will be made from proceeds of loans, guaranteed by the Republic of El Salvador, from the International Bank for Reconstruction and Development for the Comision Ejecutiva Hidroelectrica Del Rio Lempa. Payment for local expenditures will be made from funds of the Comision Ejecutiva Hidroelectrica Del Rio Lempa.

Contract Documents are expected to be ready for distribution for qualified bidders by the end of January 1961.

OFFICIAL PROPOSALS

Bids: March 7, 1961

Monona Terrace Civic Center and Auditorium Madison, Wisconsin

Plans for bidding will be available about January 21, 1961.

The Project will include:

a. Parking structure for 930 cars.
b. Exhibition Hall—40,000 sq. ft.
c. Meeting Rooms—17,000 sq. ft.
d. Theater—2,300 seats.
e. Theater—460 seats.
f. Community Center—30,000 sq. ft.
g. Art Gallery—12,000 sq. ft.

Designer, Frank Lloyd Wright. Architect, William Wesley Peters.

Bids to be opened approximately March 7, 1961.

Bidders' qualifications and proof of responsibility must be filed by February 24, 1961, on forms available from Ray Burt, Building Commissioner, City of Madison, Wisconsin.

Plans will be available for inspection at F. W. Dodge Offices in Madison, Milwaukee, and Chicago.

Copies of contract documents may be obtained from Ray Burt, Building Commissioner, City-County Building, Madison, Wisconsin.

District of Columbia—Highway Construction—Dept. of Hwys. & Traffic, D. C., Jan. 5, 1961. SOUTHWEST FREEWAY—11TH ST., S.W., CONNECTION TO 12TH ST. EXPRESSWAY, FEDERAL AID PROJECT NO. S-SG-72(1) — Invitation C-6168-H, consisting of 5,200 sq. yds. reinforced Portland cement concrete base 10" dept; 11,100 sq. yds. sheet asphalt pavement 2½" depth; 1,890 cu. yds. Class BB wall concrete; 12,000 cu. ft. Class B stone masonry; 17 each prestressed concrete beams, type A, and 54 each prestressed concrete beams, type B. (Wage rates have been predetermined by the Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Div., Procurement Office, D. C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $30.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, Febr. 2, 1961, in RM. 424, 499 Pa. Ave., N. W.

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid.

They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.70 a line per issue.

OFFICIAL PROPOSALS

Bids: February 15, 1961

Grand Trunk Western Railroad Company — Contract #5a Grading and Drainage Structures

Sealed proposals for Contract #5a, Grading and Drainage Structures to be installed near Broadway Street, Blue Island, Illinois, which is to be performed as a part of the Calumet-Sag Navigation Project, will be received from bidders by the Grand Trunk Western Railroad Company, 131 West Lafayette Boulevard, Detroit 26, Michigan until 12:00 o'clock noon FEB. 15, 1961. Bids will not be publicly opened.

Plans and bidding documents may be obtained from Mr. C. J. Morris, Chief Engineer, upon receipt of $15.00 deposit per set, which deposit will not be returned. Proposals shall be submitted upon the Form of Tender provided and accompanied by check or bid bond in the amount of 5% of the bid. The accepted bidder shall provide Lien and Performance Bonds and obtain insurance as provided in the Contract documents.

Principal items of work include 34,000 cubic yards of compacted embankment, 3,300 cubic yards of excavation and backfill for drainage structures, some 4,000 lineal feet of assorted sizes of perforated corrugated metal pipe and reinforced concrete pipe and 25 manholes and inlets as well as the construction of two crossing protection towers.

The Grand Trunk Western Railroad reserves the right to reject any or all bids.

C. J. Morris
Chief Engineer

EMPLOYMENT OPPORTUNITIES

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Electrical System Design Engineer. At least 3 years experience in transmission, distribution or substation design. Resident Engineer — experienced in construction of rural type transmission, distribution and substation facilities. These openings offer permanent employment with opportunity for advancement, with long-established Midwest consulting firm. P-5810, Engineering News-Record.

Engineer—Estimator—Experienced in plant, mill and highway bridge construction. Location — Jacksonville, Florida. Send complete resume with anticipated salary to: P-5806, Engineering News-Record.

General Superintendent for roads, sewers and utility work in New Jersey area. Give full details as to age, experience, marital status and salary desired. P-5803, Engineering News-Record.

Civil Engineer. Construction materials company with 32 locations in New Jersey & Pennsylvania has an opening in engineering department for engineer with experience in aggregate plant layout and design. Excellent working conditions, fringe benefits. Send resume to Houdaille Construction Materials, Inc., 10 Park Place, Morristown, N. J., Attention Personnel Manager.

Structural Testing & Stress Analysis. Electrical strain gage experience. Model experience helpful. Give complete resume and salary requirements. Chicago. P-5878, Engineering News-Record.

Construction Accountant for established, middle-sized general contractor. Accounts payable, payroll, and costs, full set of books to taxes. Good salary, living and working conditions in small central Maryland city. Must have experience, capacity for hard work, and good record. Write P-5892, Engineering News-Record.

Structural Engineer. Design, investigations, reports. Responsible position in small office. Industrial and commercial structures. Min. 10 yrs. experience. Send complete resume. Chicago. P-5883, Engineering News-Record.

(Continued on page 84)

TO THE PROVEN PROJECT MANAGER WHO IS SATISFIED WITH HIS POSITION . . . BUT WHO IS CAPABLE OF GREATER MANAGERIAL RESPONSIBILITY.

One of the Leading International Engineering Organizations, Located in the New York Metropolitan Area, Now Offers Unexcelled Growth Opportunities With Its Staff of High Level Engineers.

DO YOU HAVE . . .

. . . A Chemical, Mechanical or Civil Engineering Degree?

. . . A minimum of 10 years experience (preferably engineering architectural contracting) in the chemical, petro-chemical or petroleum field?

. . . The initiative to meet the challenge of complex assignments?

. . . The ability to successfully motivate engineering specialists?

IF SO . . .

You may possess the right qualifications for this select opportunity. You will associate with a high level staff group engaged on a wide variety of projects and enjoy outstanding working conditions as well as liberal benefit plans. Your salary will be commensurate with your experience.

TO REPLY . . .

Send letter enclosing a resume or description of your professional experience. All replies will be held in complete confidence.

BOX ENR 1784, 125 W 41 ST, NY 36

HIGHWAY DESIGNERS

(Recent Engineering Graduates Preferred)

SALARY $455 TO $600 PER MONTH

"WORK AND LIVE IN ARIZONA'S WONDERFUL CLIMATE"

APPLY TO:

ARIZONA HIGHWAY DEPT.
PERSONNEL DIVISION
206 S. 17TH AVE., PHOENIX 7, ARIZONA

HIGHWAY and BRIDGE ENGINEERS

Permanent positions available for graduate Civil Engineers with a minimum of five years' experience in Highway, Drainage, or Bridge Design.

Company benefits include hospitalization, insurance, sick leave and vacation.

Send complete resume, references and salary requirements to

RACKOFF ASSOCIATES
1033 W. Third Avenue, Columbus 12, Ohio

ENGINEERS DESIGNERS

McKee offers permanent career opportunities to individuals qualified by experience to undertake the design of:

Steel Plants — Refineries
Sintering Plants — Chemical Plants
Pelletizing Plants — Petro-Chem Plants

Remuneration commensurate with experience and ability.

Reply in confidence to:
G. VICTOR HOPKINS
Arthur G. McKee & Company
2300 Chester Ave. Cleveland 1, Ohio

HIGHWAY ENGINEERS
For Overseas Assignment

CONSTRUCTION ENGINEERS
MAINTENANCE ENGINEERS
PLANS & SPECIFICATIONS ENGINEER

Highway Engineers with a minimum of ten years experience in responsible position preferably with a State Highway Department. Ability to assist and train counterparts imperative. Send complete resume, photograph and present salary to

P-5898—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

REPRESENTATIVES or DISTRIBUTORS for STRUCTURAL STEEL PRODUCTS

Fabricator of unique line of stock-designed structural steel products seeks aggressive representative outside New England area now contacting architects, structural engineers, contractors, builders, etc. Should have own qualified estimators, detailers, draftsmen and erectors available. Product advertisements draw tremendous response from all over the world, and initial leads will be furnished.

Write **RW-5891**, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y.

CHEMICAL OR MECHANICAL ENGINEERS

One of the world's largest pharmaceutical companies has available varied and challenging assignments in Plant Engineering. About five years' experience required in the process industries. Applicants should be capable of assuming full responsibility for project design and coordination. Knowledge of construction methods and chemical maintenance desirable. Send resume to Personnel Dept.

PARKE, DAVIS & COMPANY
Detroit 32, Michigan

EMPLOYMENT PROBLEM?

When you are in need of specialized men for specialized jobs, contact them through an employment ad in this publication.

PUBLIC RELATIONS MAN

A Midwest Engineering and Architectural firm with a million dollar a year income wants Engineer or Architect to contact clients and prospective clients.

Please send complete personal data.
All inquiries strictly confidential.
P-5888, Engineering News-Record
520 No. Michigan Avenue, Chicago 11, Ill.

• POSITIONS VACANT
(Continued from page 82)

Public Works Administrator. Wanted by Benton Township an experienced man with administrative ability to maintain 60 miles of sanitary sewers and lift stations. Requires man with good public relation record, who knows sewer construction, civil engineer preferred. Salary open. Send application to R. W. Petrie and Associates, P.O. Box 56, Benton Harbor, Michigan.

Civil Engineer—Experienced all phases of municipal development. Capable of assuming full charge Civil Department in Midwest engineering firm. Possibility of affiliation to responsible party. Indicate availability. P-5886, Engineering News-Record.

Equipment Superintendent or Master Mechanic to organize and manage a maintenance and repair program for a medium size highway contractor. Midwest Location. P-5853, Engineering News-Record.

Sales Engineer—Sales positions open with large form manufacturer selling to contractors. Some knowledge of construction essential. If you are interested in a real opportunity for high earnings with a company that has made steady progress in the industry, write giving qualifications and resume of experience to P-5854, Engineering News-Record.

Project Manager—for medium size building contractor located in central Connecticut. Graduate engineer preferred. Experience required in subcontracting, coordination with architects, engineers, and owners, scheduling and expediting. Senior position with excellent opportunity for advancement. Send full details and salary requirements. P-5851, Engineering News-Record.

General Superintendent. Midwestern utility contractor, city distribution, cross country pipelines of all types, industrial piping and fabrication. Must have good following of top construction men, customer contacts and customer relations. Some estimating experience required and engineering experience would be an asset. Send complete resume. P-5875, Engineering News-Record.

Wanted Civil Engineer with 5-10 years Heavy Dam Construction experience for established Construction Company. Prefer a man 40 years of age or over to work in home office as Project Manager on Dam Construction and other heavy construction work. Martin K. Eby Construction Co., Inc., P.O. Box 1679, Wichita, Kansas.

Highway Design Engineer, preferably registered, to head up the preparation of contract plans and specs for expressway design contract in Connecticut. Minimum 5 yrs. experience required. Salary $7800-9000. Send complete resume. P-5816, Engineering News-Record.

Sales Engineers—We need men with sales ability & experience in concrete & construction for sales engineering position open in Chicago, Virginia, Texas and Metropolitan New York. Must have potential as future district sales manager. Positions are independent, interesting, challenging & long term. Sika Chemical Corp., Passaic, N. J.

General Superintendent—Must be completely experienced in all phases of grading, paving, site work and road construction. Salary open, yearly employment, two weeks vacation. All replies confidential. Send complete resume to The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Guard Rail Superintendent—Must be qualified to handle field reports, payroll forms and exercise independent judgment pertaining to problems of guard rail installation. Salary open. P-5955, Engineering News-Record.

Supt. and Foreman—Storm drain and flood control—Experienced large diam. pipe, excavation and conc. box. Proven organizer and producer—So. Calif. P-5957, Engineering News-Record.

Civil Engineer—Estimator—Must be completely experienced in site work take-offs. Salary open, yearly employment, two weeks vacation. All replies confidential. Send complete resume to The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Equipment Superintendent for established highway and heavy construction contractor. Must have thorough knowledge and be capable to supervise the maintenance and repair of large heavy equipment spread. Excellent opportunity for right man. The W. L. Harper Company, P.O. Box #170, Cincinnati (12), Ohio.

• POSITIONS VACANT

Wanted—General Superintendent for well-established Paving and Grading Firm. Must have thorough knowledge of all phases of Dirt and Concrete Paving. Only a top man will be considered. P-5937, Engineering News-Record.

Civil Engineer with 20 to 26 years experience in design and construction of highway, bridge, airport, waterfront, and industrial projects to manage consulting office in New York City. P-5932, Engineering News-Record.

Bridge Designer, graduate engineer, minimum 3 yrs. experience, Connecticut expressway project. Beginning salary $550-$650 per month depending upon qualifications. Structural draftsmen, beginning salary $450-$600 per month depending upon ability. Send complete resume. P-5953, Engineering News-Record.

Wanted: Construction Superintendent, must be experienced, large scale public works project. Midwest. Send resume stating age, education, experience, references, salary desired. P-5926, Engineering News-Record.

Civil Engineering graduate with minimum of 2 years experience for permanent position in the Engineering Department of the City of Rock Island. Send resume to Administrative Officer, City of Rock Island, City Hall, Rock Island, Illinois.

Estimator—Engineer, Heavy Construction Division. Immediate Opening. Graduate civil engineer with minimum of five years construction experience. Some field and design work desirable. Ability to prepare estimates for bridges, docks, locks, dams and other heavy projects. Will be under supervision of Chief Estimator, but must be far more than takeoff man. Age preference: 28-35 years. Submit complete resume in writing including salary requirements to: Personnel Director, Blount Bros. Construction Company, P.O. Box 949, Montgomery, Ala.

• EMPLOYMENT SERVICES

200-1,000 new positions reported monthly. Get free copy. National Employment Reports, 20 E. Jackson, 902-B, Chicago 4.

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 50 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 659 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

General Supt. 44, 20 years experience on heavy industrial, commercial, chemical and institutional work. Engineering background. PW-5869, Engineering News-Record.

Construction Supt., Engineer. Twenty years experience on buildings, available soon. PW-5818, Engineering News-Record.

Estimator-engineer-manager; P.E. Age 39. Experienced bridges and heavy construction from bid to completion. PW-5838, Engineering News-Record.

Gen. const. supt. 12 yrs. same co. 15m per +. Avb. Jan. 1. Box 657. Hanford, Calif.

Estimating Engineer—Analyst. Preparation/ analysis of estimates, costs, budgets, financial/economic studies, for construction/operation of high-pressure, high-temperature steam, chemical plants, foundry, metalworking shops; knowledge EDP, computer programming; $11,200. PW-5849, Engineering News-Record.

Project Manager. 36 years experience industrial and heavy construction, mechanical and structural projects, estimates to completions. PW-5865, Engineering News-Record.

General Manager, Contract Admin. Estimating, methods, claims, 22 yrs. hvy. constr. major projects U.S. & O.S. PW-5864, Engineering News-Record.

Executive Female: 15 yrs exp all phases genrl const. efficient coordinator, administrator, mgr, atty, govt contracts, claims. PW-5887, Engineering News-Record.

Construction Manager. Heavy construction experience as Job Engineer and Supt, from bid to completion, both field and office. Desires position as Project Mgr or Supt in Central New Jersey or vicinity, with progressive firm. Age 39. PW-5882, Engineering News-Record.

Construction Supt., age 53: Available about February 15, all types construction; best references, prefer southeast. PW-5908, Engineering News-Record.

• POSITIONS WANTED

Soils Engineer, Civil, M.S., Licensed. Several years varied experience in soils and foundations. Location east. $10,000 min. PW-5885, Engineering News-Record.

Civil Engineer, BSCE, 11 years foreign and domestic experience in design and construction of bridges, water front and offshore structures, buildings, Oil Co. camps and oil handling facilities. Seeks responsible foreign job. Speaks Spanish. PW-5947, Engineering News-Record.

Sewer & Tunnel Supt. specialized in deep heavy sewers, wellpointing, heavy shoring, rock muck and concrete work. PW-5933, Engineering News-Record.

Bridge designer, Age 31, Reg. Ohio & Mich., seeks position w/Cons. Engr. Prefer NYC, East, Midwest. Resume on request. Inquiries acknowledged. PW-5934, Engineering News-Record.

Sales Engineer—B.S.C.E., 38, married. 12 years diversified experience, highways, heavy construction, precast concrete. Presently employed but seeks challenge. South preferred. PW-5954, Engineering News-Record.

Graduate C.E., P.E., Age 38. 11 years experience design, estimating & supervision heavy construction with consultant. Seeks position with General Contracting firm. Prefer midwest consider other locations. PW-5952, Engineering News-Record.

Field Elect. Engr. (Power Application), Heavy Const., Struct. and Equip. erection, and mechanical background. Available now. 207 W. Chestnut St., Rome, New York.

Project Engineer 30 years experience on planning design and construction of dams, powerhouses, ports and harbors. Successful record in U.S. and Overseas. Will travel —graduate C.E. and registered in California. PW-5950, Engineering News-Record.

Project Manager, Estimator, General Construction, 35. Now employed in Eastern U.S. Desires to relocate to Rocky Mountain States or West Coast. Available spring 1961. PW-5916, Engineering News-Record.

Mechanical Designer, 57, exp. plumbing, htg., air cond. systems, industrial piping, desires position in Florida with consulting engineers—archt's or industry. PW-5913, Engineering News-Record.

Ground—Water Engineering Geologist—Administrative and field experience, domestic, foreign. Experienced ground-water hydrology, geophysics, well design, project engineering. Supervision drilling operations. PW-5914, Engineering News-Record.

Purchasing Agent 20 yrs. experience all phases major industrial & power plant const. PW-5923, Engineering News-Record.

Construction Field Engineer A.S. 5 yrs. exp. bldgs. and gral. const. will travel available now. PW-5925. Engineering News-Record.

Gen. Supt.: 30 yrs. exp. found. & marine const. cofferdams, caissons, piles, underpinning, mass exc. & concrete, piers & bulkheads. Best references. $13,000.00 Min. + %. Consider foreign with family status. PW-5927, Engineering News-Record.

Architect's Field Representative—Construction Supervisor. Owner's Representative. Successfully completed supervision of eight million dollar contract, including electrical and mechanical phases. Ten (10) years experience. Age 35, Engineering background, reference and resume upon request. PW-5928, Engineering News-Record.

Struct. Engr.—Calif. Lic. CE & SE—35 —12 years experience in the design of bldg. structures of all types with last 5 years in charge of design and drafting room of small consulting firm. Presently employed at $10,000 a year. Wishes position with greater challenge. PW-5935, Engineering News-Record.

B.C.E., 26, 4 yrs. struct. design and const. exp. on industrial projects. Desire eng. position with challenge and future. Presently employed, avail. 2 wks. notice. PW-5951, Engineering News-Record.

Supt. water, sewers, san. & storm. duct, etc. All types pipe work, sheeting, shoring, rock. 30 yrs. exp. Exc. refs. PW-5965, Engineering News-Record.

Estimating, Engineering and Legal. Administrator for contractor or consultant. Will invest. Resume. PW-5967, Engineering News-Record.

Bldg. Materials, Research & Development C.E. 30, married, have 9 yrs. exp. in Bldg. & Hvy. Const. as Proj. Mgr., Supt., Field & Office Eng. Have been most valuable & satisfied when engaged with the problems of Materials, their design, fabrication, & erection. PW-5966, Engineering News-Record.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.70 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *BUSINESS OPPORTUNITY*

Professional Civil Engineer, New York Registration, Age 33. Structural, Highway, Building, Administrative, Financial and Executive Experience and ability. Thoroughly qualified. Desire association with Consulting Engineer or Contractor. Investment to $25,000. New York State Location Preferred. Reply to: BO-5930, Engineering News-Record.

CONSTRUCTION SUPERVISION
Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
National Schools of Construction
Est. 1952
Satsuma, Florida

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

2 Quonset Huts For Sale
100 x 125 and 100 x 100
B. J. LUCARELLI & CO., INC.
Newark 2, N. J. MA-4-3838

FOR SALE: American 375 Crawler Crane— S/N GS1107—Powered with G.M. #3030-C Diesel Engine—50 ft. Boom, 12 ft. Jib, Fairlead Tagline, Swivel Hook, 12'-4" long Crawlers, 28" wide Pads. LIKE NEW! $15,000.00
F.O.B. Dover, Ohio
BROSCO EQUIPMENT CORPORATION
P.O. Box 432 Dover, Ohio Phone 72519

SEARCHLIGHT"
IS
Opportunity Advertising
—to help you get what you want—to help you sell what you no longer need.
Take Advantage Of It
For Every Business Want
"Think Searchlight First"

FOR SALE
Engineering and Surveying Business
Thirty Years in Oroville, California
"Feather River Project" now started
Future business bright. Owner wishes to retire. Will help new owner get started.
BO-5919, Engineering News-Record
68 Post St., San Francisco 4, Calif.

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"
• *Tandem Axle* • *Front Wheel Drive*
For specifications, prices, delivery, write
MEMPHIS EQUIPMENT COMPANY
P.O. Box 2852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

U. S. ARMY EE-8
Telephone, fully reconditioned at 2 for $35.00. Any number can be used on the same line. Wire 1c per ft. or $35.00 per mile. Write for complete telephone list.
TELEPHONE ENGINEERING CO.
Dept. ENR 1191 Simpson, Pa.

WANTED
5,000 TONS
Used Steel Sheet Piling
MP-101 or SP6A 30' to 50'
Lots of 1000 Tons plus
Prefer material used once
Furnish Mill Certificates
W-5939—Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED
USED STEEL GIRDER TRESTLE
Part or all 1,000 ft. length
Capable of carrying loaded Clyde 24 Whirley and 15 ton locomotive
Also need used 50,000 gal. steel water tank
Write, Wire or Phone full details and price to
WHISLER STEEL PILING COMPANY
1908 Railway Exchange Bldg., St. Louis 1, Mo.
Phone CHestnut 1-4474

WANTED:
6 or 7½ Yard
Concrete Tilt Mixer
W-5940, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WE NEED
5400 pcs. of MZ 38
SHEET PILING
60'—0" long in Detroit
W-5942, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FOR SALE OR RENT
AMERICAN REVOLVER R-15 WHIRLEY GANTRY CRANES.
25 TON IND. BH. #5 DIESEL LOCO. CRANE.
40 TON IND. BH. #8 LOCO. CRANE. 1951.
40/50 TON AMERICAN #508 DIESEL LOCO. CRANE. NEW 1943.
50 TON AMERICAN STIFFLEG DERRICK AND 3 DRUM AMERICAN HOIST.
45 TON GEN. ELEC. DIESEL ELEC. LOCOS.
25 TON GEN. ELEC. DIESEL ELEC. LOCO.
1 YD. LORAIN L-30 CRANE. NEW 1951.
WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS & LEVELS
Various Makes
NEW & REBUILT
Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.
INSTRUMENTS RENTED
Midwest Distributors for W. & L. E. Gurley and Wild Heerbrugg Instruments
NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent
Headquarters for REPAIRS — any make — Factory Service We will also buy your old instruments or take them in trade.
A complete line of Engineering Instruments and equipment for field or office. Write for catalog NRL 201.
WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

ALL MAKES
RE-BUILT
REPAIRS
RENT
REAL EXPERTS
BUFF

69 Dey St., New York WOrth 2-2787

EUCLID LOADER & BOTTOM DUMPS

9BV Loader (Converted—extended conveyor, G. M. 6-110 engine—similar to 10 & 18BV).
5—25FDT-99W 13 Yd. Bottom Dumps, Cummins engines.
4—14TDT—122W 17 Yd. Bottom Dumps, Cummins engines.
5—23TDT-122W 17 Yd. Bottom Dumps, G. M. engines, automatic transmissions and converters.

Above units immediately available, subject to prior sale or disposition.

L. B. SMITH, INC.
357 W. Fayette St. Syracuse 2, N. Y.
Phone: GRanite 5-2196

SAVE ON YOUR CHAINS ROLLERS SPROCKETS IDLERS, ETC.

TRACK

for Caterpillar—International—Allis Chalmers
BRAND NEW—GUARANTEED
SEABOARD EQUIPMENT CO., INC.
161-10B Jamaica Ave., Jamaica 32, N. Y.
AX-7-4422

NORTHWEST 80D Shovel

EXCELLENT CONDITION
In Our Yard Ready To Go
HODGE & HAMMOND, INC.
720 Garrison Ave., New York 59, N. Y.
Phone: Kilpatrick 2-2400

RAILS-TIES

TRACK ACCESSORIES

PILING

SURPLUS NEW and USED For Sale, Wanted or Rent

RAILS

MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W. VA.

NEW, SURPLUS

STEEL SHEET PILING

BELVAL Z
perfect range of corrugated sections most economical section modulli

AMERLUX STEEL PRODUCTS CO.
NEW YORK 17, N. Y.

Direct Mill Office of the
ARBED STEEL MILLS IN LUXEMBOURG

BELVAL P straight web section Best Deflection Section

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50', 56' & 48' & 40' & 35'
1900 PCS. MP12—12', 25', 35', 40' & 60'
2880 PCS. BETH.—AP3 20', 25, 30', 35' & 60'
2500 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 65', & 77'
1400 PCS. BP8, BP10, BP12—BP14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'
500 PCS. 10' & 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
TORONTO—BALTIMORE—JACKSONVILLE
MIAMI—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton Industrial Loco Crane, 60' Boom
3600' JOY ELEC AIR COMPRESSOR
600 HP-2300 V-WN 224C-Radial New 58

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephones MU-2-3075 or MU 2-1898

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky
TW 5-9484

PIPE

Surplus New & Used
FOR SALE, WANTED OR RENT

H-BEARING PILES

8" x 36# — 12" x 53#
10" x 42# — 14" x 73#
Immediate Shipment — Other Sizes Available
Chicago—Buffalo—Memphis—Cincinnati
Steel Sheet Piling—Pile Hammers
WHISLER STEEL PILING CO.
CHestnut 1-4474
1908 Railway Exchange Bldg., St. Louis 1, Mo.

STEEL PIPE

Large Stock—½" to 72" O. D. for all purposes

Terrific savings on 8⅝", 10¾", 12¾", 16", 20", 24", 30", 36" OD.

SQUARE and RECTANGULAR TUBING—sizes ½" x ½" up to 8" x 8" in wall thicknesses from .049" to .375"

Fast delivery anywhere . . . by car or with our large fleet of trucks and trailers.

Get our low prices and save, save, SAVE!
Write, Wire or Call (COLLECT)
PRospect 3-3020
VALLEY STEEL PRODUCTS CO.
124 Sidney St. St. Louis 4, Mo.

STEEL SHEET
PILING by DIALING
Call St. Louis Collect
CHestnut 1-4474

RENT, SELL OR BUY
H-BEARING PILE
FAST SERVICE
NATION-WIDE STOCKS
LOW RATES
ALL LENGTHS
ALL SECTIONS

PILE DRIVING EQUIPMENT
NORTH, SOUTH, EAST or WEST

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

STEEL SHEET PILING

LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co. Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

Call: HYacinth 7-4900

PIPE, VALVES & FITTINGS

PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE

ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
130	MP-101	40 to 45 ft.	Indiana
450	MP-116	20 to 60 ft.	Missouri
144	MP-116	24 to 31 ft.	Nebraska
139	MP-112	20 to 22 ft.	Illinois
310	MP-116	20 to 60 ft.	Tennessee
384	MP-115	15 to 60 ft.	Missouri
440	MP-115	15 to 60 ft.	Illinois

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

When you need PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

ASSOCIATED PIPE & FITTING CO., INC.

PILING PIPE SHELLS MANDREL FITTINGS
"H" BEARING PILE-POINTS AND SLEEVES
TIMBER SPLICERS AND SHOES
CULVERTS CIRCLE ARCH SECTIONAL

262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

STEEL PIPE

NEW — STRUCTURAL — RECONDITIONED
VALVES & ALL TYPE FITTINGS
COMPLETE FABRICATION FACILITIES

GREENPOINT PIPE SUPPLY CORP.
341 Stagg Street, Brooklyn 6, N. Y. EV. 6-7200

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on following pages

NEW ENGLAND

Goodkind & O'Dea

Consulting Engineers

Design and Supervision
Foundations, Structures, Highways
1214 Dixwell Ave. Hamden, Conn.
610 Bloomfield Ave., Bloomfield, N. J.
325 Spring Street, New York 7, N. Y.
108 W. Lake Street, Chicago 1, Ill.

Fay, Spofford & Thorndike, Inc.

Engineers

Industrial Plants Incinerators
Water Supply, Sewerage, Drainage
Bridges Express Highways
Port and Terminal Work Airports

Designs Investigations
Supervision of Construction

Boston 8, Massachusetts

Jackson & Moreland, Inc.
Jackson & Moreland Int'l., Inc.

Engineers and Consultants

Electrical—Mechanical—Structural

Design and Supervision of Construction
-:- for -:-
Utility, Industrial and Atomic Projects

Surveys—Appraisals—Reports

Machine Design-Technical Publications
Boston Washington New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants—Electrical, Steam and Hydraulic Engineering—Investigations, Reports, and Appraisals.
Boston, Mass. Charlotte, N. C.

Metcalf & Eddy

Engineers

Soils, Foundations, Waterworks, Sewage Works, Drainage, Irrigation, Flood Control, Refuse, Industrial Wastes, Airports, Highways, Military Projects, Industrial and Commercial Facilities.
Statler Building, Boston 16, Massachusetts

Moore Survey & Mapping Corp.

Engineers-Photogrammetrists-Surveyors

Geodetic Control—Construction Layout
Aerial Topographic Surveys—Tax Maps
Hydrographic Surveys—Photogrammetry
29 Grafton Circle—Shrewsbury, Mass.

MIDDLE ATLANTIC

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, aerial topographic mapping.
1212-18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8131

Ewin Engineering Corporation

Designers of Port Facilities, Foundations, Industrial Plants, Bridges, Highways, Sewage Disposal and Urban Renewal.

5104 MacArthur Blvd. N.W.
Washington, D. C.

DuPont Plaza Center, Miami 32, Fla.
150 Savannah St. Mobile, Ala.

Benjamin E. Beavin Company

Drainage, Water, Sewerage, Grading, Soils & Geologic Engineering
Ports, Airfields, Highways, Structures
104 E. 25th St., Baltimore 18, Md.

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Baker-Wibberley & Associates, Inc.

Consulting Engineers

Civil, Sanitary, Structural, Foundations, Soils
49 N. Jonathan St., Hagerstown, Md.
Baltimore, Maryland
Waynesboro, Pennsylvania

Louis Berger & Associates

Consulting Engineers
Studies—Design—Supervision
Highways—Structures—Airfields
177 Oakwood Avenue Orange, N. J.
2nd & Locust Streets Harrisburg, Pa.
200 S. Main St Salt Lake City, Utah
8 rue de Neuchatel Geneva, Switzerland
16 Baselerstrasse, Frankfurt, Germany

Joseph S. Ward and Associates

Consulting Soil and Foundation Engineers

Site Investigation, Boring Supervision, Laboratory Soil Testing, Foundation and Pavement Analysis and Design, Construction Supervision, Engineering Reports and Consultation
91 Roseland Avenue Caldwell, N. J.
Jefferson Building Phila., Penna

Victor J. Lo Pinto Associates

Consulting Engineers

SOILS - FOUNDATIONS - HIGHWAYS
Investigation - Design - Supervision
Sub Surface Exploration
Laboratory and Field Tests
Land Development Engineering
58 Branchport Ave., Long Branch, N. J.

Albert C. Jones Associates

Consulting Engineers

Private and Municipal Engineering
Sewerage-Sewage Treatment
Water Supply and Distribution
Investigations and Appraisals
Photogrammetric Engineering
Aerial Maps
223 High St. Mount Holly, New Jersey

Edwards and Kelcey

Engineers and Consultants

Traffic Transportation Parking
Expressways Airports Public Works
Surveys - Reports - Design - Supervision
3 William Street, Newark 2, New Jersey
Boston Salt Lake City New York
Providence Minneapolis

Porter & O'Brien

O. J. PORTER & COMPANY
CONSULTING ENGINEERS

Airports — Highways — Expressways — Buildings — Bridges — Dams — Harbors — Foundations — Stabilization — Pavements
Reports, Designs & Supervision
415 Frelinghuysen Ave., Newark 5, N.J.
4201 Sunset Blvd. Los Angeles 29, Cal.
1421-47th Avenue Sacramento 22, Cal.

Boswell Engineering Co.

Consulting Engineers

Highways, Bridges, Airports, Municipal
Ridgefield Park, N. J.
West Nyack, New York
Salt Lake City, Utah
Anchorage, Alaska

John Clarkeson

Consulting Engineer

Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

M. C. Tomasetti

Consulting Engineers—Surveyors

Designs, Construction Supervision
Highways—Airfields—Structures
Soils—Foundations—Pavements—Drainage
Materials Investigations
Site Designs, Subdivisions, Surveys
Greenwich, Conn., New Rochelle, N. Y.

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St. Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design and Supervision of Construction of Bridges, Highways, Expressways, Buildings, Special Structures, Airports and Airport Facilities

111 Eighth Avenue, New York 11, N.Y.

Milwaukee - Washington - Philadelphia
Paris - Athens - Tehran

Blauvelt Engineering Co.

CONSULTING ENGINEERS

Highways,

Bridges,

Reports

New York, N. Y. Philadelphia, Pa.
Woodbury, N. J. Crystal Lake, Ill.

Clinton Bogert Engineers

Consultants

Clinton L. Bogert Ivan L. Bogert
Donald M. Ditmars Robert A. Lincoln
Charles A. Manganaro William Martin
Water & Sewage Works Incinerators
Drainage Flood Control
Highways and Bridges Airfields
145 E. 32nd St., New York 16, N. Y.

Bowe, Albertson & Associates

Engineers

Water and Sewage Works—Industrial Wastes — Refuse Disposal — Valuations —Laboratory Service

75 West St. 1060 Farmington Ave.
New York 6, N.Y. W. Hartford 7, Conn.

Buck, Seifert and Jost

Consulting Engineers

Water Supply — Sewerage — Hydraulic Developments—Reports and Valuations, Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

John V. Dinan

Consulting Engineers

Established 1925

Pre & Post Construction Structural (Building) Examinations, Engineering investigations, Reports, Expert Testimony, Seismograph Studies of Blasting and Pile Driving Vibration, Design, Supervision of Shoring, Underpinning, Foundations.

303 W. 42nd St., New York 36, N. Y.
COlumbus 5-6773

Ebasco Services Incorporated

ENGINEERS
CONSTRUCTORS
MANAGEMENT CONSULTANTS
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering
Appraisals
Two Rector Street, New York 6, N. Y.
140 S. Clark Street, Chicago 3, Ill.
1416 Commerce Bldg., Dallas 1, Texas
611 Equitable Bldg., Portland 4, Ore.
120 Montgomery Street,
San Francisco 4, Cal.
1625 Eye Street, N.W. Wash. 6, D. C.

Gibbs & Hill, Inc.

Consulting Engineers
Water, Sewage & Industrial Waste Treatment Works — Roads, Bridges & Railroads—Conventional & Nuclear Power Generation — Electric Transmission & Distribution Systems—Industrial & Communication Facilities.
PENN STATION NEW YORK 1, N.Y.

Hardesty & Hanover

Consulting Engineers

Bridges
Fixed and Movable
Highways
Expressways, Thruways
Special Structures
Design, Supervision,
Inspection, Valuation

101 Park Avenue New York 17

Frederic R. Harris, Inc.

Consulting Engineers

New York, N. Y.

Norwalk, Conn. New Orleans, La.
Toronto, Canada The Hague, Holland

Hazen and Sawyer

Engineers

Richard Hazen Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
360 Lexington Ave., New York 17, N.Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations,
Express Highways
Administrative Services
Kansas City - Cleveland - New York

King & Gavaris

CONSULTING ENGINEERS

Associates:

W. Mack Angas
David Carsen
Dr. G. P. Tschebotarioff
Sidney Zecher

Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction
41 E. 42nd St., New York 17, N. Y.

Litchfield Whiting Bowne & Assoc.

Engineers—Architects

Sewage, Water, Bridges, Airports, Flood Control, Electrification, Hospitals, Schools, City Planning, Abbatoirs, Highways, Air Conditioning, Industrial Buildings, Military.
8 West 40th St., N. Y. 18, N. Y.
Rome Tehran Bangkok

Modern Engineering Corporation

Design—Consulting

62 William Street, New York, N. Y.

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

415 Madison Ave., New York 17, N.Y.
Eldorado 5-4800

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest most direct method of contacting consultants who may be available NOW.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

Parsons, Brinckerhoff, Quade & Douglas

ENGINEERS

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

165 Broadway — New York 6, N. Y.

Malcolm Pirnie Engineers

Malcolm Pirnie — Carl A. Armander
Ernest W. Whitlock — Malcolm Pirnie, Jr.
Robert D. Mitchell — Alfred C. Leonard

MUNICIPAL AND INDUSTRIAL

Water Supply—Water Treatment
Sewage and Waste Treatment
Drainage—Rates—Refuse Disposal

25 West 43rd St., New York 36, N. Y.
2910 Grand Central Ave., Tampa 9, Fla.

The Pitometer Associates

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special
Hydraulic Investigations
New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Praeger-Kavanagh

Engineers

126 East 38th St., New York 16, N. Y.

Seelye Stevenson Value & Knecht

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Railroads, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies, Real Estate Development.

Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Ave., New York 17, N.Y.

YOU TOO

can use the services of the consulting firms listed on these pages. They represent a great and varied collection of specialized talents.

USE THEM TO

Supply talents and specialties not existing in your organization
Obtain authoritative outside checks on your own findings and conclusions
Provide neutral and impartial opinion when there might be a difference of opinion in your company.
Take full advantage of the progress and mistakes made by others
Ease the present—and continuing —shortage of engineers
Secure social services that would not warrant full time employment
Do a hundred and one different jobs for you

Singstad & Baille

Consulting Engineers

Ole Singstad — David G. Baille, Jr.
Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. — New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty

233 Broadway, New York City 7

Havana, Cuba — Lima, Peru
Bogota, Columbia, Caracas, Venezuela

Steinman, Boynton, Gronquist & London

Consulting Engineers

HIGHWAYS - BRIDGES - STRUCTURES

117 Liberty St., New York 6, N. Y.

Tippetts-Abbett-McCarthy-Stratton

Engineers and Architects

Ports, Harbors, Flood Control, Power Dams, Bridges, Tunnels, Highways, Railroads, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

375 Park Avenue, New York 22, N. Y.

Arnold H. Vollmer Associates

Consulting Engineers

Highways, Parks, Bridges, Municipal Improvements, Public Works, Reports, Surveys, Contract Plans.

25 W. 45th Street, New York 36, N. Y.
Telephone: Circle 7-6250

Lawrence S. Waterbury

Consulting Engineer

Bowling Green 9-9298
26 Broadway New York 4

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.
Troy, N. Y.

Royal Contracting Corp.

MUD-JACKING, DRILLING & GROUTING SPECIALISTS

Box 141, Bridgeport, Pa.
Ph. BRoadway-2-5891

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports Traffic & Parking — Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices
Pittsburgh, Pa. — Philadelphia, Pa.
Daytona Beach, Fla.

Capitol Engineering Corporation

Consulting Civil Engineers

Dillsburg, Pennsylvania, U.S.A.

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highways and Expressways

900 North Sixth St. — Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Albright & Friel Inc.

Consulting Engineers

Water, Sewage, Industrial Wastes and Incineration Problems, City Planning Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates

3 Penn Center Plaza — Phila. 2, Pa.

Fridy, Gauker, Truscott & Fridy, Inc.

Architects & Engineers

Water, Sewer, Waste Disposal, Roads, Airports, Power & Lighting, Petroleum Facilities, Hospitals, Schools, Public & Industrial Buildings, Reports, Plans, Supervision, Appraisals.

1221 Arch St. — Philadelphia 7, Pa.

Harris-Dechant Associates

Consulting Engineers

Water Supply, Dams, Stream Improvement, Flood Control, Port & Harbor Development; Sanitary & Industrial Wastes; Hydro & Steam Power; Highway Engineering & Design.

Surveys—Reports—Economics

123 S. Broad St., Philadelphia 9, Pa.

The Kuljian Corporation

Engineers • Constructors

WE DESIGN AND CONSTRUCT

Power Plants • Public Works • Processing Plants • Oil Refineries • Chemical Plants • Textile Plants • Airport Facilities • Military Installations

1200 N. Broad St., Philadelphia 21, Pa.

Justin & Courtney

Consulting Engineers

Joel B. Justin - Neville C. Courtney
Dams and Power Problems, Hydroelectric, River Basin Developments, Water Supply, Foundations.

121 South Broad Street
Philadelphia 7, Pa.

Yule, Sticklen, Jordan & McNee

ENGINEERS

Bridges, Highways, Airports
Design, Investigations, Reports
Supervision of Construction
Civil, Structural Mechanical & Electrical

Cedar Cliff Drive
Camp Hill, Pa.

1225 Vine Street
Philadelphia 7, Pa.

5564 North High Street
Columbus, Ohio

Hunting, Larsen & Dunnells,

Engineers

Industrial Plants — Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision, Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Design and Consulting Engineers

Electrical • Mechanical • Structural
Civil • Nuclear • Architectural

First National Building
Pittsburgh 22, Pennsylvania

Pennsylvania Drilling Company

Subsurface Explorations, Grouting, Industrial Water Supply, Mineral Prospecting.

Large Diameter Drilled Shafts, Reports

1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.; Jackson Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.

Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office

221 W Olive Street, Scranton, Pa.

Branches:

1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
300 Mt. Lebanon Blvd., Suite 100 Pittsburgh 34, Pa.
Box 1446—Grand Junction, Colorado
Nashville, Tennessee
Tucson, Arizona
Buchans, Newfoundland

Frank D. McEnteer's Associates, Inc.

Consulting Engineers

Bridges, Highways, Industrial Plants
Design, Investigations, Surveys

Terminal Building, Clarksburg, W. Va.

SOUTH

Harry Hendon & Associates, Inc.

Engineers

Civil Engineers—Public Utilities
Investigations—Designs
Supervision of Construction

P. O. Box 7404A — 925 Sligh Blvd.
Birmingham 13, Ala. — Orlando, Florida

Professional Assistance

in solving your most difficult problems is offered by these consultants.

HOW ABOUT YOU?

These consultants are taking full advantage of the opportunity now available to reach over 82,000 prospects and customers every week. You, too, can now receive the benefits of the PROFESSIONAL SERVICES SECTION 52 times in a year.

For further information write:

ENGINEERING NEWS-RECORD
Class. Adv. P.O. Box 12, New York 36

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names . . . **Additional cards on preceding and following pages**

Palmer and Baker Engineers, Inc.

Consulting Engineers - Architects

Surveys-Reports-Design-Supervision Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Comp'ete Soils, Materials and Che ical Laboratories

Mobile, Ala. New Orleans, La.
Washington, D. C.

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
First Natl. Bank Bldg., Miami 32, Fla.

J. Stephen Watkins

Consulting Engineers

Highways—Bridges—Sewerage
Water Supply—Industrial Plants

446 E. High St., Lexington, Kentucky
2617 Dixie Highway, Louisville, Ky.
107 Hale St., Charleston, W. Va.

Eustis Engineering Company

FOUNDATION AND SOIL
MECHANICS INVESTIGATIONS

Soil Borings *Laboratory Test*
Foundation Analyses *Reports*

3635 Airline Highway
Metairie, Louisiana

Schmidt Engineering Co. Inc.

Consulting Engineer

Investigations, Reports, Designs, Heavy Construction — Dams — Hydroelectric Projects—Foundation Explorations and Treatment—Water and Sewerage Works
Emerson Building Chattanooga, Tenn.
Greater Tenn. Bldg. Knoxville, Tenn.

ETCO Engineers and Associates

Foundation Consultants

Test Borings Laboratory Tests
Recommendations, Design and Supervision

2116 Canada Dry St., Houston 23, Tex.
727 Main St. Baton Rouge, La.
427 Carondelet St., New Orleans 12, La.

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works Sewerage
Water Purification Sewage Treatment
Floor Relief Power Generation
Drainage Appraisals

20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Consulting Engineers

Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highway and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.

360 East Grand Ave. Chicago 11, Ill.

THIS SECTION
is available to consulting engineers to contact prospective clients every week or every other week.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Public Transit Subways
Traffic & Parking Railroad Facilities
Expressways Industrial Plants
Grade Separations Municipal Works
Urban Renewal Port Development

150 North Wacker Drive, Chicago 6
San Francisco New York Boston

Harza Engineering Co.

Consulting Engineers

Hydroelectric Plants & Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development

400 West Madison Street Chicago 6

Greeley and Hanson

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
14 E. Jackson Boulevard
Chicago 4, Illinois

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed & Movable Bridges, Expressways, Industrial Plants, Airports, Dams.
Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.
Oding Bldg., Lansing 33, Mich.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - Gas
Public Utilities - - Industrials

331 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Consultants to the Power Industry
Studies • Design • Supervision
140 South Dearborn Street,
Chicago 3, Ill.

Soil Testing Services, Inc.

Consulting Soil and Foundation Engineers

John P. Gnaedinger Clyde N. Baker, Jr.
Site Investigations, Foundation Recommendations and Design, Laboratory Testing, Field Inspection & Control

1827 N. Harlem Ave., Chicago 35, Ill.

Suhr, Peterson, Peterson & Suhr

Consulting Engineers

REPORTS—PLANS—SUPERVISION
Sewerage, Water Supply, Flood Control & Drainage, Airports, Roads, Surveys
Fixed & Movable Bridges

130 N. Wells St., Chicago 6, Ill.
P. O. Box 1858, Anchorage, Alaska

Chas. W. Cole & Son

Engineers and Architects

3600 E. Jefferson Blvd.
South Bend, Indiana

2112 W. Jefferson St.
Joliet, Illinois

The Hinchman Corporation

Consulting Engineers

"WORLD-WIDE ACTIVITIES"
Survey • Design • Supervision
Specializing In
Corrosion Control • P. C. C. Certification Tests
Electromagnetic Interference Studies
Francis Palms Bldg., Detroit, Michigan

The H. C. Nutting Company

Testing Engineers—Inspection Service
Foundation Investigation—Test Borings
Soil Mechanics—Sewage Flows
Construction Control—Concrete
Water Waste Survey

4120 Airport Road Cincinnati 26, O.

The Austin Company

Design and Construction
Manufacturing and Process Plants
Newspaper and Broadcasting Bldgs.
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Merchandising Bldgs. & Facilities
Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

A. A. Burger, H. H. Moseley, J. W. Avery, F. S. Palocsay, E. S. Ordway, A. M. Mock, G. H. Abplanalp, S. H. Sutton
Frank C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Wastes, Valuation—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

F. H. Maag

Consultant—Construction Accounting

Estimating, Cost Control,
Accounting Methods
Insurance Requirements
13909 Edgewater Drive
Phone—AC-6-3738
Lakewood, 7, Ohio

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants Office Buildings
Stadiums Grand Stands Field Houses
Bridges Garages Laboratories

7016 Euclid Ave. Cleveland 3, Ohio

Rackoff Associates

Engineers

Highways, Expressways, Bridges, Sewerage and Water Systems, Fiscal and Master Planning, Investigations, Urban Renewal, Supervision

1033 W. Third Ave., Columbus, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings—Diamond Drilling
Load Tests
Soils Mechanics Laboratory

1810 North 12th St. Toledo 2, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water works Sewerage & Treatment
Waste Disposal

2000 W. Central Ave., Toledo 6, Ohio

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures

2000 South Acoma St.
Denver 23, Colorado

Stanley Engineering Company

Consulting Engineers

Hershey Building 208 S. LaSalle St.
Muscatine Ia. Chicago 4, Ill.

Black & Veatch

Consulting Engineers

Water - Electricity - Sewage - Gas - Industry - Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

1500 Meadow Lake Parkway
Kansas City 14, Missouri

Burns & McDonnell

Engineers—Architects—Consultants

4600 E. 63rd St. Trafficway
Kansas City 41, Missouri

Bucher & Willis

Consulting Engineers & Planners

Planning—Bridges and Structures—Roads, Streets, Highways and Airports—Municipal Services—Aerial Photogram: etry—Surveys—Foundations—Reports

Box 583
1412 W. 47th St. 625 E. Crawford
Kansas City 5, Missouri Salina, Kan.

Uri Seiden

Structural Consulting Engineer

Trouble shooting for Contractors. Modification of existing structures and buildings under construction. New designs. Technical arbitration.
Professional Bldg., Kansas City 6, Mo.
VI 2-5336

Russel and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel Engineering Co.

Engineers—Architects

Bridges, Structures and Reports, Industrial and Power Plant Engineering

915 Olive St., St. Louis 1, Mo.
417 Montgomery St., San Francisco Calif.

Benham Engineering Company

Established in 1909
Design and Consulting Engineers

215 N E 23rd Street
Oklahoma City 5, Oklahoma

Spencer J. Buchanan and Associates, Inc.

Consulting Engineers

Soil Mechanics and Foundation Engineering. Civil Engineering Services Reports, Design and Field Supervision.
310 Varisco Building, Bryan, Texas
TAylor 2-3767

CHECK
this section whenever you need professional advice.

THE CONSULTING ENGINEER

By reason of special training, wide experience and tested ability, coupled with professional integrity, brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — **Additional cards on preceding pages**

Soil Mechanics Incorporated
Foundation Exploration and Testing Services
Site Investigations, Soil Borings, Field and Lab Testing, Load Tests, Reports
310 Varisco Building, Bryan, Texas TAylor 2-2767

Lockwood, Andrews & Newman
Consulting Engineers
Navigation Facilities — Public Works Airports — Earthworks — Roads, Structural, Mechanical — Electrical Reports — Design — Supervision Surveys — Valuations
Corpus Christi—Houston—Victoria, Texas.

FAR WEST

International Engineering Company, Inc.
ENGINEERS
Investigation - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California

Jacobs Associates
Consulting Construction Engineers
TUNNELS—DAMS
EARTHMOVING—FOUNDATIONS
Methods, Cost Estimates, Plant Design, Management, Surveys, Engineering Geology, Materials Handling
582 Market St., San Francisco 5, Calif.

Nevada Testing Laboratories, Ltd.
Engineering—Civil—Soils & Foundation Consultants—Field Testing—Soil Borings — Rock Drilling — Materials Field Control—Load Tests—Laboratory Testing—Soils—Concrete—Asphalt
300 W. Boston Ave. Las Vegas, Nev.

INSPECTION & TEST

Robert W. Hunt Company
Inspection and Testing of Engineering Materials & Equipment
General Offices and Laboratories
810 South Clinton Street, Chicago 7.
All Principal Cities

Johnson Soils Engineering Laboratory
Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests Shear & Consolidation Tests - MOBILE LABORATORIES
193 West Shore Ave., Bogata, N. J.
Bogata-Hubbard 7-4408

Pittsburgh Testing Laboratory
A national service with complete laboratory and inspection facilities.
Laboratories in principal cities.
Main Office: 1330 Locust St., Pittsburgh, Pa.

AERIAL SURVEYS

American Air Surveys, Inc.
AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories
907 Penn Ave. Pittsburgh 22, Pa.
Branches-Manhasset, N.Y.-Atlanta, Ga.

FIELD SURVEYS

Waterman, Fuge & Assoc.
Surveyors
Completely equipped survey parties for domestic and foreign work. Highways Control for aerial surveys—Municipal, streets, sewers, water lines—Gas and Electric transmission lines—P. O. Box 620, Fort Atkinson, Wisconsin. Telephone JOrdan 3-2469.

GEOLOGISTS

Dames & Moore
Consultants in
Applied Earth Sciences
Soil Mechanics Engineering Geology
Geophysics
Chicago • New York • San Francisco
Los Angeles • Portland • Seattle
Atlanta • Salt Lake City

Geologic Associates
ENGINEERING GEOLOGISTS
Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling
Brentwood, Tennessee
Phone (Nashville) VErnon 2-1748

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

	PER WEEK		
	13 times	26 times	52 times
¾"—	$14.35	$13.35	$12.45
1½"—	$23.85	$22.30	$21.00

THE CONSULTING ENGINEER

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

SEARCHLIGHT
Equipment Locating Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment not currently advertised. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads on pages 85 & 86 to see if what you want is not currently advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Locating Service
Classified Advertising
c/o ENGINEERING NEWS-RECORD
P.O. Box 12, New York 36, New York

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Locating Service
Classified Advertising
c/o ENGINEERING NEWS-RECORD
P.O. Box 12, New York 36, N. Y.

Please help us locate the following equipment:.....

.....

Name ..... Title .....

Company ..... Street.....

City ..... Zone..... State.....

1/19/61

CLASSIFIED ADVERTISING INDEX

Amerlux Steel Products Co..... 86
Albert Pipe Supply Co..... 86
Arizona Highway Department..... 83
Associated Pipe & Fitting Co..... 86

Brosco Equipment Corp. 85
Buff 85

Commaco Inc. 86

Gillis & Co. 86
Greenpoint Pipe Supply Co..... 86

Hodge & Hammond Inc..... 86

Lucarelli & Co. Inc..... 85

McKee & Co. Arthur G..... 83
Memphis Equipment Co. 85
Midwest Steel Co. 86
Mississippi Valley Equipment Co..... 86

National Blue Print Co..... 85
National Schools of Construction 85

Parke, Davis & Co..... 83

Rackoff Associates 83

Seaboard Equipment Co., Inc..... 86
Smith L. B. 86
Stanhope, Inc. R. C..... 86

Telephone Engineering Co..... 85

Valley Steel Products Co..... 86

Warren-Knight Co. 85
Western Services Corp. 86
Whisler Equipment Co. 85
Whisler Steel Piling Co.....85, 86
Wilson Engineering Co. 85

ADVERTISERS IN THIS ISSUE

Acrow Corp. of America..... 12
Allis-Chalmers 72-73
Allison Div., General Motors Corp..... 43
American Pipe and Construction Co...3rd Cov.
Armco Drainage & Metal Products, Inc...50-51

Bay City Shovels, Inc..... 13
Beaver-Advance Corp. 52
Bethlehem Steel Co..... 25
Charles Bruning Co., Inc., Paragon Revolute Div. 49

Cerand Corporation 53
Chicago Bridge & Iron Company.....2nd Cov.
Columbia-Southern Chemical Corp..... 60
Concrete Reinforcing Steel Institute..... 7

Richard Dudgeon Inc..... 68
Joseph Dyson & Sons, Inc..... 6

Elgood Concrete Forms Corp..... 68

Ford Motor Company, Ford Div.....8-11

The Goodyear Tire & Rubber Co. Industrial Products Div.....28-29
Gulf Oil Corporation.....46-47

Lead Industries Assn..... 18
LeRoi Div., Westinghouse Air Brake Co... 66
Lone Star Cement Corp..... 48
Lukens Steel Company..... 16

Mack Trucks, Inc.....58-59
McGraw-Hill Book Co., Inc..... 91
Moretrench Corporation 14
Murphy Diesel Company..... 1

National Lead Company..... 45
Northwest Engineering Co..... 3

Pacific Crane & Rigging Co..... 12
Pittsburgh Steel Products Div.....76-77
Posey Iron Works, Inc..... 54

John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation..... 33

Servicised Products Corp..... 65
Sonoco Products Company.....70-71
Stacor Equipment Co..... 54
Symons Clamp & Mfg. Co..... 2

The Tapecoat Company..... 54
Texaco Inc. 4-5
Thew Shovel Co..... 78
Timber Structures, Inc..... 37
The Timken Roller Bearing Co.....4th Cov.
The Torrington Company..... 56
Tretol, Inc. 68

Wheeling Corrugating Co.....62-63
R. D. Wood Company..... 55

Yuba Consolidated Industries, Inc..... 27

Professional Services 87-90

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

Employment Opportunities 82-84
Notices
Proposals 80-82
Equipment
(Used or Surplus)
(For Rent, Sales Wanted).....85, 86
Advertisers' Index 90

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 86,835

D. S. ROBERTSON, Advertising Sales Manager
HUGH J. CARLSON, Assistant Business Manager

ADVERTISING REPRESENTATIVES

Atlanta, 9—1375 Peachtree St., N.E.,
Robert H. Powell, Jr.

Boston, 16—McGraw-Hill Bldg., Copley Square
C. D. Neulen

Chicago, 11—520 No. Michigan Ave.
L. H. Hunt, W. G. Payne, Earl S. Moore, Jr.

Cleveland, 13—1164 Illuminating Bldg., 55 Public Square
H. A. Bergstrom, F. P. DiToro

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
John Grant, Robert T. Wood

Denver, 2—Tower Building, 1700 Broadway
J. W. Patten

Detroit, 26—856 Penobscot Bldg.
R. I. Mace

Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tiebout

New York, 36—500 5th Ave.
C. D. Neulen, H. T. Olsen
Robert L. Barker

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen
Patrick Keleher

Pittsburgh, 22—4 Gateway Center
Malcolm Russell

Portland 4, Oregon—Room 445, Pacific Bldg.
Scott Hubbard

St. Louis, 8—Continental Bldg., 3615 Olive St.
E. B. Mingle, Jr.

San Francisco, 4—68 Post St.
John J. Hernan

OTHER SALES OFFICES:

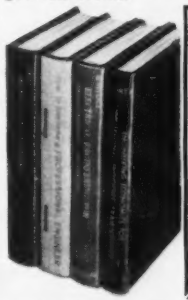
United Kingdom, Edwin E. Murphy, 95 Farringdon St., London E.C. 4.—Germany, Austria, Stan Kimes, 85 Westendstrasse, Frankfort/Main, Germany—Switzerland, Italy, France and Belgium, Michael R. Zeynel, 2 Place du Port, Geneva, Switzerland

Win your PROFESSIONAL ENGINEER license faster

Prepare to pass examinations this direct practical way

In this library you will find complete, detailed instructions on how to get your Professional Engineer's license without difficulties or delays. These four books have helped thousands of other men, and can help *you*, too. The library clears up questions about *what—where—how*—and *why* of licensing regulations and examination procedures so that you can start at once upon this important step for an increasingly successful engineering career.

From the moment you decide to get working on your license, this library offers practical, concrete help. It tells you where to write and how to apply . . . the things to observe in writing up your experience and the job titles considered "professional" by the examiners . . . the kind of questions you will be asked and the sort of answers that get full credit.



Professional Engineer's License Examination Library

4 Vols. • 1585 pp. 734 illus. • $29.00

EASY TERMS: $9.00 in 10 days, then $10.00 monthly until $29.00 is paid.

Soon all states will require all engineers to become licensed, John D. Constance, licensing authority, points out. Now, with the help of this Library, you can be ready for the many bigger opportunities open only to the registered engineer. In the simplest, swiftest way possible, you get the essential practical pointers for becoming licensed. In fact, by following step-by-step instructions on how to prepare your experience record properly, *you may even get a waiver of some examination requirements.*

You get hundreds of sample questions selected from actual examinations for the Professional Engineer License, the Land Surveyor License, and the Engineer-in-Training Certificate. Typical of the examinations being given now in all states, these questions cover mechanical, electrical, civil, structural, and chemical engineering, and include engineering economics and land surveying.

Library includes . . . .

HOW TO BECOME A PROFESSIONAL ENGINEER
By John Constance, 262 pp.

PROFESSIONAL ENGINEER'S EXAMINATION QUESTIONS AND ANSWERS
By William La Londe. 2nd Ed. 615 pp., 273 illus.

ELECTRICAL ENGINEERING FOR PROFESSIONAL ENGINEERS' EXAMINATIONS
By John Constance. 448 pp., 381 illus.

ENGINEERING ECONOMICS FOR PROFESSIONAL ENGINEERS' EXAMINATIONS
By Max Kurtz. 260 pp., 80 illus.

10 DAYS' FREE EXAMINATION

McGraw-Hill Book Co. Dept. ENR-1-19
327 W. 41st St. New York 36

Send me The Professional Engineer's License Examination Library for 10 days' examination on approval. In 10 days I will (check one) ☐ send you the full price of $29.00; or ☐ $9.00, then $10.00 a month until the full price is paid. Otherwise I will return the Library postpaid. (We pay delivery costs if you remit with this coupon; same return privilege).

Name .....
Address .....
City ..... Zone....State.....
Company .....
Position .....

For price and terms outside U. S. write McGraw-Hill Int'l, New York 36 ENR-1-19

It Takes Two

THE SEARCH FOR SCAPEGOATS is one of the least pleasant, but most prevalent proclivities of mankind. In cases of bribery, the search usually focuses public condemnation on the taker rather than the giver. And this is currently true of a recent report charging corruption in the New York City Buildings Department (see p. 24).

State investigators spare little in blasting the personnel of the Plan Examining Division of the department for accepting bribes to expedite plan-processing service. But, while properly castigating the takers of such payola, the investigators are relatively lenient in their condemnation of owners, architects, engineers and builders who perpetuate this system.

The system—of paying under the counter to get plans expedited—didn't spring into being overnight, and unfortunately, it will be hard to end it overnight. Nevertheless, those who pay have a clear responsibility to do their part in seeing that it does end. These payments are not in the same category as tipping a headwaiter to get faster service, although they are often regarded in such light fashion. The recipients in a building department are violating a public trust. The passed money is therefore graft and not a tip. Actually the New York Buildings Department's official forms carry the explicit statement that "bribery is a crime in which giver and taker are equally guilty."

Architects, engineers and builders are busy people, but this does not absolve them of the responsibility for traveling at least part of what the late Prof. W. E. Wickenden called "the second mile." Who else can educate public officials and the public to the need for paying adequate salaries to attract qualified, honest personnel to man municipal building departments? Who else can propose the modernization of building codes that would permit plan-examination to be carried out more quickly?

Building department corruption, outmoded building codes and other obstacles to honest, efficient administration of municipal building departments exist very largely because they are tolerated. Dishonesty and incompetence must be eliminated from building departments, but their officials also need help from the citizenry. For every bribe-taker there is a bribe-giver. It always takes two.

Plenty of Ammunition

AMONG DOMESTIC ISSUES on the Congressional agenda, none is more deserving of high priority than the one relating to improvements in the nation's transportation system. And if Congress chooses to dive into the problem as it should, it has the necessary springboard in the Doyle task force report (ENR Jan. 12, p. 19).

The usefulness of the Doyle report will be found in the fact that its recommendations go far beyond any piecemeal tinkering with existing organizations and policies. They may or may not have merit, but they should stimulate some of the broad-scale thinking and debate that the transportation problem demands. The Senate, whose Commerce Committee ordered the Doyle task force report, will need the benefits of such thinking and debate if it is to act wisely on bills that are certain to be introduced to aid transport in one way or another.

The first of these bills came along last week. With the laudable purpose of aiding the commuter railroads serving the major cities, and with special focus on New York, it makes the somewhat surprising proposal that large federal loans be made to the cities rather than to the railroads themselves. This kind of round-about aid requires some pretty sober thought before it is granted. Congress has plenty of ammunition to shoot at such targets, and it is hoped that it will use it freely.

Pre-Convention Planning

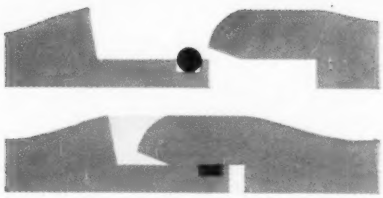
CONVENTION TIME IS AT HAND. Important meetings demand the attention and the attendance of civil engineers and contractors. But as the size and number of such meetings steadily increase, more and more men are critically looking at the time attendance demands and correspondingly, when in positions of responsibility, at means for improving the value of such gatherings and expediting their official business.

An improvement idea put into practice by the Canadian Construction Association is therefore worthy of note. CCA brings all of its main committees, including its management committee, together to handle their separate problems, after which a full day is devoted to a careful study of the Association's problems that will come before the next annual convention. At the most recent meeting these included the Association's Statement of Policy and all the resolutions proposed for presentation.

It is the fact that this meeting was held seven weeks before the annual convention the end of this month that makes this procedure unusual. This gives time for all the difficulties and problems brought to light by the preliminary drafting of the official statements to be studied, if necessary by special task groups. The result is that when resolutions are introduced to the entire membership, they are already carefully considered presentations. This does not stifle discussion, at least in CCA's case, but it does mean that when, at the close of the annual convention, the statements are adopted officially, they represent the best thinking of the entire organization.

It would be a good thing if there were a wider recognition of the fact that serious business and resolutions that are to have meaning and stature cannot properly be dreamed up in smoke-filled rooms in the two or three days of the usual annual meeting. CCA has developed one effective way of dealing with the problem.

LONG-TERM ECONOMY



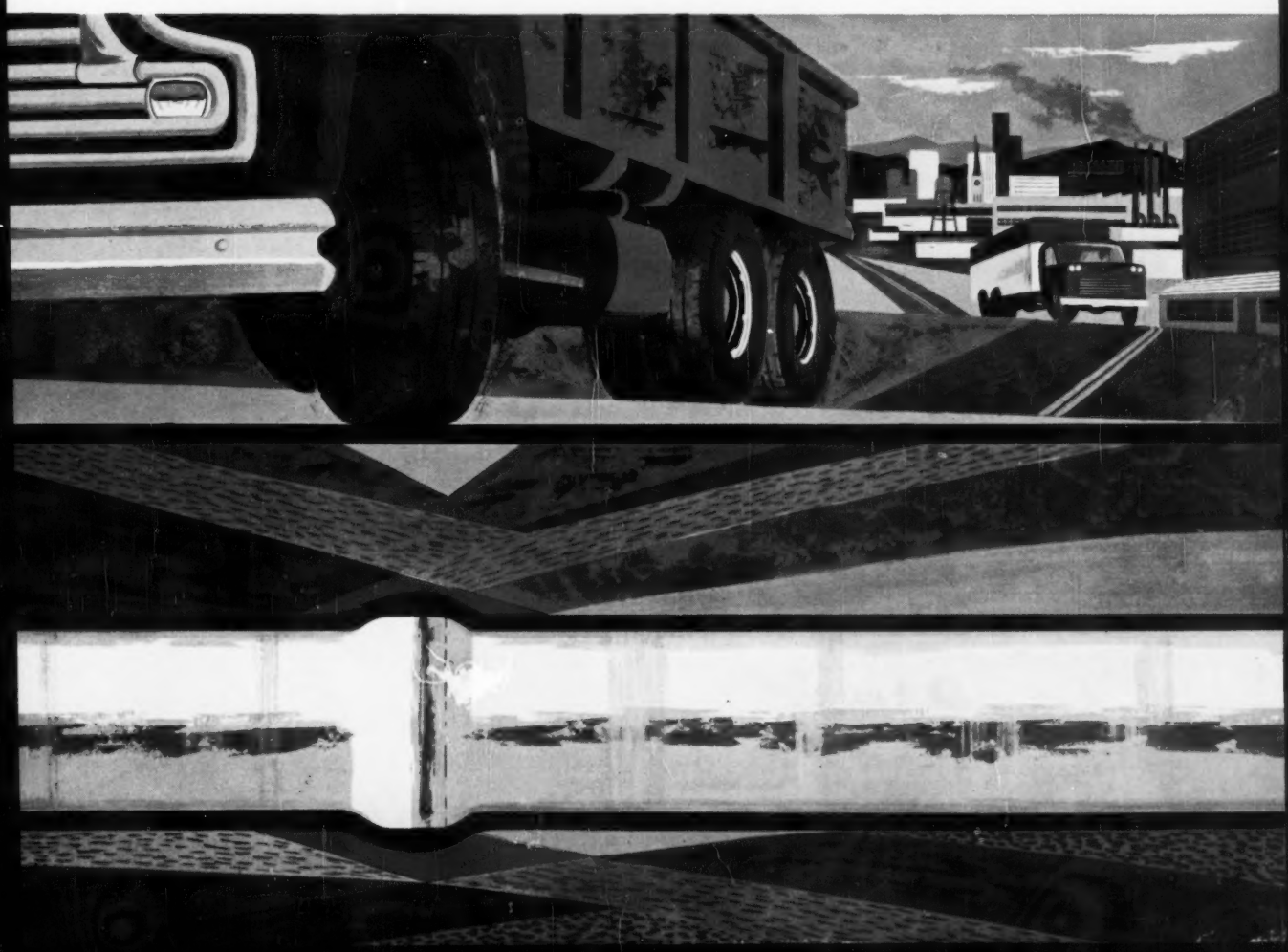
DEPENDABLE PIPELINE CLOSURE

A pipeline is only as strong as its joints. In addition to water pressure, American Concrete Cylinder Pipe joints will withstand the forces of expansion and contraction, sudden live loads, traffic vibration, earth settlement and many other forces which act upon a pipeline. ■ Steel joint rings, sized to carefully controlled tolerances, confine an "O" ring rubber gasket by compressing it on three sides in an annular groove in the spigot ring and on the fourth side by the bell ring. The design is such that the gasket, sized to the precise volume required, maintains a positive water-tight seal even while permitting a considerable degree of flexure at the joint. ■ The ease of installation and the reliability obtained through the use of this proved joint are additional reasons why American Concrete Cylinder Pipe means long term economy to the pipeline owner. See an American sales engineer when planning your next project.

American Pipe and Construction Co. • Los Angeles • San Diego • Hayward • Portland
Bogota, Colombia/**American Concrete Pipe Co. (subsidiary)** • Phoenix • Albuquerque

A MEMBER OF THE CONCRETE PRESSURE PIPE ASSOCIATION

American PIPE AND CONSTRUCTION CO.



Digs and stacks 2,000 yds. an hour at "impossible" speeds...on 349 Timken® bearings

Weighing in at 2½ million lbs., this giant Bucyrus-Erie wheel excavator knocks out previous records for this type of equipment. It can dig and stack 2,000 yds. of over-burden an hour. And the stacker conveyor belt speed—1,000 fpm—was believed impossible to achieve for this type of service.

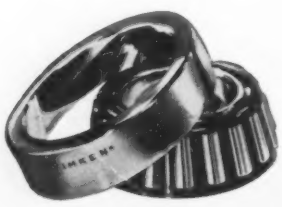
To take the extreme loads on the main wheel drive—heart of the machine—Bucyrus-Erie uses three Timken® double row tapered roller bearings. Two more are on the conveyor drive. And 344 Timken bearings roll the loads at other critical points. Timken bearings work better because . . .

1) *They take all loads.* Their taper lets Timken bearings take all radial and thrust loads. And full-line contact between rollers and races provides extra load-carrying capacity when needed.

2) *They practically eliminate friction, reduce maintenance.* Timken bearings are geometrically designed and precision-manufactured to roll true. And because they hold shafts concentric with their housings, Timken bearings make closures more effective in keeping lubricant in, dirt out, maintenance down.

Also, you get the *extra* advantages of Timken Company leadership such as service from graduate engineer salesmen qualified to work directly with your purchasing, engineering and production people. Service backed up by advanced research and testing facilities unique in the bearing industry.

When you buy Timken bearings you get . . . *1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs.* The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.* Canadian Division: Canadian Timken, St. Thomas, Ontario.



Industry rolls on

TIMKEN®

tapered roller bearings